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ABSTRACT

This report provides results from a study of the priorities of the vocational and technical education programs in Puerto Rico in light of the opinions of teachers, students, and administrators. Information on the methodology is followed by narrative and tables that present study findings and recommendations. The study covers these areas: identification of current and projected needs according to labor supply and demand, examination of teacher and student needs, evaluation of the quality of vocational education programs in terms of their relevancy and pertinence of these programs to the needs of the world of work, determination of the capacity of the education agencies to deliver the services needed in vocational education, and determination of whether the services and activities sponsored under the Carl D. Perkins Vocational Education Act are in tune with the needs identified in the study. (YLB)

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Needs Assessment Study of Vocational, Technical, and High Skills Education Programs 1986-1987

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August 1987

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September 2, 1987

Dr. Nilda Matos Betancourt
Assistant Secretary
Vocational, Technical and High
Skills Education Programs
Department of Education
Hato Rey, Puerto Rico 00919

Dear doctor Matos Betancourt:

Enclosed please find five (5) copies of the report "Needs Assessment Study of the Vocational, Technical and High Skills Education Programs" in English.

Please contact us, if further information is needed.

Cordially,

Edibaldo Silva Lopez
President

Enclosures

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Needs Assessment Study of Vocational and Technical Education Programs

1. Objective of the Study

The basic objective of this study conducted by Clapp and Mayne, Inc. is to provide the Puerto Rico Department of Education, Vocational and Technical Education Program with information about the priorities of this program in light of the opinions of teachers, students, and administrators. It also compared the program offerings with current and projected labor supply and demand. These findings and recommendations provide the Puerto Rico Department of Education with the necessary data for the planning of these offerings,in tune to the requirements set forth by the Carl D. Perkings federal regulations.

2. Methodology

To conduct this study, four representative samples were selected from the following groups: students, teachers, administrators of the Department of Education and employers. Students and teachers were selected from sixty four (64) schools from all over Puerto Rico. A questionnaire was designed for each of the four groups, which were directly administered by field researchers, with the exception of the administrators' questionnaires, which were administered by personnel of the Department.

3.0 Curriculum

Results

3.1.1 The programs which revealed the greatest occupational demand were the following in this order: Vocational Industrial, Business Education, Marketing and Distribution and Technical Education. However, some courses of these programs require either the stabilization or reduction in their enrollments. Some examples are: secretarial, bookkeeping and accounting, and business administration.

3.1.2 The programs with the least occupational demand were the following: Agriculture and Health. The Home Economics programs revealed an occupational demand which was greater than the Department's enrollments; however, such demand is for short term courses such as cooks, housekeepers and others. The demand for courses in practical nursing, technology of X-Rays and operations rooms results to be low.

3.1.3 The students and teachers perceptions concerning the occupations in which they may work after graduation were in agreement with the

occupations in greater demand as revealed by the employers' surveys, and other sources reviewed (PROICC and the Department of Labor).

3.1.4 In terms of needs related to the curriculum, the perception of teachers is that they are not given participation in curriculum revision. Also, they expressed there is lack of adequate and periodical technical assistance by curriculum specialists and in curricular areas that should be eliminated from some medular courses.

3.1.5 Students do not revealed total satisfaction with the current content of the curriculum.

3.1.6 The employers expressed that in terms of skills and qualities the most important for the graduate to have are the technical skills expected in the occupation. A great majority of the employers indicated that they provide additional training in the employment.

3.1.7 The Department's administrative personnel surveyed ranked as a second priority assignment of funds for curriculum improvement.

Recommendations

3.1.1 The enrollment of vocational courses must be in accord with the occupational demand. However, it is necessary to revise courses in order to aim at self employment through integration in the curriculum of skills related to how to establish a business.

3.1.2 Technical courses, secretarial and areas related to health must be directed to the complement of associate degrees.

3.1.3 It is recommended that specialized centers at the postsecondary level be established to serve regional needs. These centers will serve to integrate the teaching of health related programs. These centers must be provided with the materials and equipment required in new technology. The centers can be established in other programs such as home economics, marketing and distribution and vocational industrial.

3.1.4 To promote more participation from teaching personnel in curricular revisions and changes, it is recommended that a participation and consultive mechanism be designed in a very similar way to the academic senates in institutions of higher education. The teaching personnel can be represented and integrated in an academic body whose main objective will be to collaborate in curriculum, revision, change and expansion of vocational offerings. Also, it can advise and collaborate in the development of guides and course content outlines.

3.1.5 The curriculum must be enriched by the experiences which are possible through cooperative education and students enterprises, and both approaches must be stressed. These two approaches must be integrated into

the concept of vocational education for self-employment, particularly the students enterprises since they can serve as centers for the practices on how to establish a small business.

3.1.6 In terms of the priorities for funds assignment to the curriculum area, funds must be directed to specialized vocational centers at the regional level, the revision and reduction of curriculum to integrate a curriculum unit selected to the formation and development of a small business, and the creation of an academic body with representation from teachers for curriculum revision.

3.2 Student Services

3.2.1 Orientation services are not sufficient according to the students. Also, no orientation on how to perform an employment interview is provided and on how to prepare a resume. No orientations materials are provided.

3.2.2 Tutorial services, individualized assistance, recreational activities, work and study experiences and medical services are not always available to the students.

3.2.3 The perception of administrative personnel is that student services must be the first priority for funds assignment.

Recommendations

3.2.1. Student services, particularly orientation services must be strengthened.

3.2.1 The consulting firm, in light of the findings, considers that this is a priority area, but it should not be considered as the first priority for funds assignment. However, within the orientation category, the assignment of additional personnel must be the priority, particularly to the centers with the greatest enrollments and diversifications of programs. Funds must be assigned also for materials and tests of vocational interests.

3.3 Materials, Equipment, Tools and the Physical Facilities

Results

3.3.1 Materials, equipment, tools, and the physical facilities are not in adequate conditions and some are obsolete according to students and teachers. However, considering that the development of the technical skills is the priority according to employers and that such development is subject to the equipment, materials and tools available, this area must be a great priority.

Recommendations

3.3.1 The consulting firm considers that this must be the area of greatest priority for improvements since it determines that the teaching learning process be responsive to present and future labor market conditions. Specifically, it is recommended the assignment of funds in annual increases during the next five years in order to improve equipment, materials, tools, and the physical facilities. Said fund assignment must also be responsive to the overall revision made of the vocational programs. It is considered that both aspects must be integrated in such a way that materials, equipment and tools are responsive to the curriculum and both in turn, to the needs of local economic conditions.

3.4 Quality of vocational education in terms of its relevancy to the world of work.

Results

3.4.1 The perception of the majority of employers surveyed is that they prefer to hire graduates of the vocational programs of the public high schools for positions not requiring higher education academic preparation. Secondly, the employers surveyed indicated that they would hire graduates from the technical education programs of the technological institutes of the public system. The majority expressed that they do not prefer graduates from the Right to Employment Administration's programs, or from private vocational education schools. The majority of the employers indicated that they know the public vocational education programs, which evidences that their evaluation of them is based on actual knowledge.

3.4.2 The vast majority of the employers are satisfied with the performance and skills of their employees which are graduate of the vocational programs of the Department of Education. In addition, when they compare employees who are graduate of the Department with those who are not, they considered that the Department's graduate demonstrate better performance.

Recommendations

3.4.1 In general, the opinion of the employers concerning the quality of vocational education was favorable, but a great majority indicated also that they provide training to the graduates of these programs in their businesses. From the findings, it may be interpreted that there are areas in which the Department is not providing training which forces employers to cover after hiring graduates of the system. Nevertheless, the scope of this study does not include this aspect of vocational education in Puerto Rico. A future in depth study is recommended to determine those training areas provided by industry which may well be suitable for institutional training under the curriculum of vocational education programs.

I. INTRODUCTION

I. Introduction

The Carl D. Perkins Vocational Education Act on Section 113 has established that any state interested in receiving funds for any fiscal year must submit a State Plan for a three year period in the case of an initial plan. Additionally, one of the Act stipulations includes that a needs assessment study must be conducted as the basis for the development of the State Plan.

Clapp and Mayne, Inc. conducted the needs assessment study as stipulated by the Carl D. Perkins Act, for the Puerto Rico Department of Education. This study covers the following areas: identification of current and projected needs according to labor supply and demand, examination of teachers and students needs, evaluation of the quality of vocational education in terms of their relevancy and pertinence of these programs with the needs of the world of work, determination of the capacity of the education agencies to deliver the services needed in vocational education,and determination of how the services and activities sponsored under the act are in tune to the needs identified in the study.

II. Methodology of the Study

A. Design and Description of the Sample

1. The Universe: The universe is the group of subjects to which the results of the study would be applied. The universe for this project was formed by four different groups:

1.1. Students: The students universe was defined as the total number of students enrolled during the second semester of school year 1986-1987 in the vocational education programs (occupational or non occupational) of the public schools of Puerto Rico. The groups of students include special needs students such as adults, handicapped, disadvantaged and others.

1.2. Teachers: The universe of teachers was defined as all the teachers that participated teaching in the vocational education programs of public education institutions in Puerto Rico during school year 1986-1987, second semester.

1.3. Employers: The group was defined as the total group of business persons, industrialists or other entrepreneurs that employ persons with preparation from the courses or programs of vocational education in Puerto Rico.

1.4. Administrative Personnel: This group was formed of the executives, officers and other officials of the Department of Education in Puerto Rico that formulate policy for vocational programs in Puerto Rico.

2. The Sample: The study was conducted based on a representative sample of the four universes for which the following data inputs were considered.

2.1. Sample data inputs

2.1.1. Students and Teachers: The list of all the vocational education institutions of the Department was obtained where such instruction is conducted. Also, the list of enrollments of school year 1986-87 of students by district, school and vocational education teaching area (occupational and non occupational) was used.

2.1.2. Employers: For this sample the Standard Industrial and Commercial Directory of Puerto Rico was used to select the sample of employers which represented the different economic sectors of Puerto Rico. This data was supplemented with the listing provided by the telephone directories of the Island.

2.1.3 Administrators: In this case a list of all directive positions of the Department with direct bearing on the vocational programs.

2.2. Sample design

2.2.1. Students and Teachers: The students and teachers samples design was based on a stratification by groups design with a probability in proportion to groups. The groups were based on the regions and the teaching areas and within these groups, the teaching levels and special services were used as subgroups. The groups are the schools within each of the regions and the teaching areas. Teachers and students were randomly selected from within the different schools selected for the sample.

2.2.2. Employers: The design of the sample was stratified by groups. The groups were the geographic regions and the economic sectors. The selection of individual employers was made also at random.

2.2.3. Administrative personnel: The administrative personnel was selected based on its participation in the formulation of policy for the vocational programs. The final selection was made by the Department of Education of Puerto Rico.

2.3. Sample size

2.3.1. Students: The sample size in this case was approximately 530 cases representing the seven educational regions and all vocational programs. The distribution of the total sample is presented by group on Table 1.

The students sample of the vocational programs was based on 300 cases for occupational programs, while that of the non occupational programs was based on 200 cases. This was made because it was necessary to provide for more participation from the occupational programs, than from the non occupational sector where there were only two areas to be represented. For the purposes of the analysis of the occupational areas, the estimated margin of error for the estimated 300 cases was to be a maximum of 5.7 percent at the 95 percent confidence level, which for the non occupational with a sample of 200 cases, the maximum margin expected would be of 7.1 percent of error.

For the total of 500 cases in the sample of 500 the maximum estimated margin of error was 4.5 percent. For the total analysis the data from the two programs (occupational and non occupational) will be analyzed after the corresponding weighting.

2.3.2. The teachers: The sample of the teachers was planned to be 150 and a total of 145 was actually interviewed for a maximum margin of error of 8 percent. The distribution of the sample was based on the sample principles applied to the students sample, that is more cases for the occupational areas because of its greater variability.

On Table 1, the number of the teachers in the sample is presented next to the students samples.

2.3.3. The employers: The size of this sample was of 200 cases, representing the different economic sectors and regions of Puerto Rico. The sample was randomly taken within each of the industrial areas.

Needs Assessment Study of
Vocational Programs

Table Number 1

Students and Teachers (in parenthesis)
in the Sample by Region and Teaching Area

	REGION														TOTAL	
	Arecibo		Bayamón		Caguas		Humacao		Mayaguez		Ponce		San Juan		Puerto Rico	
Teaching Area	Stu.	Teac.	Stu.	Teac.	Stu.	Teac.	Stu.	Teac.	Stu.	Teac.	Stu.	Teac.	Stu.	Teac.	Stud.	Teac.
Occupational																
Agriculture	20	(4)	5	(1)	5	(1)	0	(0)	10	(2)	5	(2)	0	(0)	45	(10)
Home Economics	0	(0)	0	(0)	5	(2)	5	(2)	5	(2)	5	(2)	5	(2)	25	(10)
Marketing and Distribution	5	(2)	5	(2)	5	(2)	5	(1)	0	(0)	0	(0)	10	(3)	30	(10)
Health Related Occupations	0	(0)	0	(0)	5	(2)	0	(0)	5	(2)	0	(0)	5	(2)	15	(6)
Business Educ.	20	(6)	15	(3)	10	(3)	10	(3)	15	(3)	10	(3)	10	(3)	90	(24)
Vocational Industrial	10	(3)	10	(3)	15	(6)	10	(3)	15	(6)	10	(3)	10	(6)	80	(30)
Technical Educ.	5	(3)	0	(0)	0	(0)	0	(0)	0	(0)	5	(3)	5	(4)	15	(10)
TAL OCCUP.	60	(18)	35	(9)	45	(16)	30	(9)	50	(15)	35	(13)	45	(20)	300	(100)
Non Occupational																
Home Economics Family Life	15	(4)	15	(4)	15	(3)	10	(3)	15	(3)	15	(4)	15	(4)	100	(25)
Industrial Arts	15	(3)	15	(4)	15	(4)	10	(3)	15	(3)	15	(4)	15	(4)	100	(25)
TAL NON OCCUP.	30	(7)	30	(8)	30	(7)	20	(6)	30	(6)	30	(8)	30	(8)	200	(50)
TAL	90	(25)	65	(17)	75	(23)	50	(15)	80	(21)	65	(21)	75	(28)	500	(150)

2.4. Description of the Sample Characteristics

2.4.1. Description of the Teachers Sample: The sample of teachers was formed of 58% females and 42% males. They were selected from different types of institutions, including area vocational schools (16%), high schools with vocational offerings (43%), high schools with vocational departments (7%), academic high schools (7%), and technological institutes (7%), among others. The teachers were selected to represent all the vocational education programs and offerings. The majority (75%) was teaching at the secondary level although teachers from other teaching levels were also selected such as the postsecondary (10%), associate degree (4%) and others. A majority or 60% had nine or more years of teaching experience in vocational education. In terms of academic preparation, the majority had from the bachelors degree to the master degree (62% and 14% respectively), although 18% had between associate degree (10%) and the high school diploma (8%). A total of 82% expressed to have work experience in the occupation taught, but 18% indicated to lack such experiences.

The clientele served by the teachers was formed by different groups. The data obtained revealed that teachers were serving the following groups of students:

- regular students (81%)
- handicapped (23%)
- disadvantaged (36%)
- adults (26%)
- out of school youths (20%)
- individuals in correctional institutions (2%)
- unmarried parents (12%)
- males (exclusively) (6%)
- females (exclusively) (3%)
- students referred by the Right to Employment Administration (16%)

(Percentages vary since they represent responses to different questions).

2.4.2. Description of the Sample - Students: For the purposes of this study of needs assessments of the vocational programs a total of 530 students were interviewed. Of this total 48% were females and 52% were males. A total of 332 or 64% were classified according to the groups defined in section 201 (b) of the Act for provision of services. Of the total of 332, five percent (5%) were handicapped, 7% were disadvantaged, 1% adults, 5% unmarried parents and/or housewifes, 9% were participants of programs designed to overcome discrimination by sex, and 3% were offenders.

A total of 525 students responded to the item regarding age. The great majority or 62% were between fourteen to seventeen years; and the largest group was found between ages 18 to 21 with 23%. Three percent (3%) of the students was reported to have 26 years of age or more.

Regarding civil status, the majority of the students were found to be not married (91%). The students were also asked to express if their schools were located in an accessible area for them or not. The majority or 72% expressed that their schools were accessible, while 28% indicated that they were not.

Significantly, a total of 56% of the students indicated to have had some work experience at least once. But only 20% of them expressed to be working at the time of the survey. The majority or 21% of the students expressed that they do not participate in paid work experience coordinated by the school; and of those responding in the affirmative only 31% expressed that their work experiences were related to the courses in which they were enrolled.

The majority of the students or 71% indicated that their plans were to seek a job right after graduation. However, 83% of them also expressed that they were planning to continue studying right after graduation from the vocational courses.

2.4.3. Description of the Administrative Personnel: In order to determine the opinions of administrative personnel regarding the priorities for funds assignments under PL. 98.524 a group of 30 individuals were selected for this study.

This survey measures both the opinions of administrative personnel that participates in decision making concerning funds assignment, and that of those who do not participate in the process.

Description of the Sample:

This population is representative of the Agriculture, Industrial Arts, Marketing and Distribution, Business Education, Home Economics - Occupational, Technical Education, Vocational Industrial, and Health Related occupations vocational programs.

Of the thirty individuals interviewed, 37% had more than six years of service in the positions held; 27% had from one to two years of services; 23% had less than one year; 10% had more than four years; and 3% had from five to six years of experience in the positions. The majority (93%) had academic preparation in vocational education and a master degree (84%) or bachelor degree 12%).

In spite of being directive personnel, the majority expressed not to have participation in the decision making process related to funds assignment.

2.4.4 Description of the Employers Sample: A total of 200 employers were interviewed representing the different economic sectors islandwide. The majority represented the services sector (41%), followed by the manufacturing sector with 38%. Also interviewed were employers representing other sectors such as the commercial (14%), agriculture (3%), finances, insurance and real estate (3%), construction (1%), transportation and communications (1%).

The majority (38%) of the enterprises surveyed had between one to 25 persons employed, while only 4% had between 1,001 to 3,000 employees. The general results indicated that more than half or 51% were enterprises with fifty or less persons employed, 12% had from 500 to 3,000; and 37% from 75 to 400.

The average academic preparation of the employees of the majority of the enterprises interviewed was from the tenth to the twelfth grade. Twenty four percent had between seventh to ninth grade and 20% from the first to the sixth grade. In contrast, the majority or 75% of the skilled workers had a preparation between the tenth to the twelfth grade and only 7% had from the seventh to the ninth grade, and 6% from the first to the sixth grade of schooling. In spite of this, it is worth to mention that in the two categories of unskilled and skilled workers, the majority of the employees had between tenth and twelfth years of schooling.

In the category of technical workers, the average academic preparation of the employees of the enterprises was the associate degree (45%). Still in this category, a significant number (33%) had between the tenth to the twelfth grade of schooling. Only 19% were reported to have a bachelors degree.

B. Description of Instruments and Procedures

1.1. Student Questionnaire: Description - The student questionnaire main objective was to measure the students needs and quality of the vocational programs. It had four parts:

I. General Information
II. Degree of Satisfaction with the Vocational Course Selected
III. Occupational aspirations and training needs
IV. Evaluation of the course in which he/she was enrolled.

It was necessary to answer all the parts of the questionnaire. Through the information requested in this instruments the needs of the special groups are measured; as well as the relevancy of the programs; the

pertinence of the programs with occupational needs of Puerto Rico; the quality of curriculum and methodology, equipment, materials and physical plant, and the student services as well.

1.2. Questionnaire: Procedure - This instrument was administered only to the students of vocational programs of the Puerto Rico Department of Education.

For each school, the total enrollment and the groups to be evaluated in the administration of instruments were indicated to the field workers. The information provided was confidential, and the names of the students were not part of the information sought.

The following are the definitions provided to the field workers administering the questionnaires:

1. Program: A group of courses of instruction that are grouped under the same category.

Examples: Business Education Program
Marketing and Distribution Program
Health Related Occupations Program

2. Course: A class or a set of classes that are organized in an integral form to prepare the student for entry into a specific occupation.

Examples: Secretarial Courses
Specialist in Retail Sales
Auto body repair

3. Class: Each of the content areas covered in a specific period as pre determined by the educational system.

Examples: Spanish 10
English 10
Typewriting I
Shorthand

4. Paid Work: In this case, it refers to the cooperative education program, which is a teaching strategy commonly used in vocational and higher education. It includes work experiences which are paid by employers. The student combines periods of classes with periods of work. The work experience must be an integral part of the course of study.

5. General skills: Shorthand, typewriting, communications, punctuality.

6. Specific skills: Use of a cash register, preparation of a file.

7. Logic sequence: Continuity, orderly succession, that keeps a relation by itself.

8. Accesible: That is located in a place where it can be used, where it is possible to be used.

9. Adequate: Appropriate, adapted to specific needs.

   Example: In the case of a book, pages must not be missing, or not damaged, or it can be used by the handicapped person.

10. Interest/Aptitude Tests: A booklet with a series of questions, which provides the students through the results of their responses with the identification of those occupations which are in tune to his/her occupational interest, and her/his capacity to perform in them.

2.1. Teachers Questionnaire: This questionnaire is made up of two parts: I. General information and II. Program Evaluation. Both parts must be answered by the teachers.

The objective of the teachers questionnaire is to evaluate the quality of vocational education. In this regard, the preparation of the teachers is measured, his/her needs for training, the special groups that are provided with vocational education, the services provided to students, the accessibility and adequacy of the physical plant, equipment and materials, the relationship of curriculum and the teaching learning process and the teaching methodology, and the administration, supervision and the coordination of these programs.

2.2. Teachers Questionnaire: Procedure - This questionnaire was administered only to teachers of vocational education of the Puerto Rico Department of Education. In each of the schools selected, the number of teachers to be administered the questionnaires was pre determined.

The information provided by the teachers was also considered confidential and their names were not requested during this evaluation.

3.1. Administrators Questionnaire: Description - This questionnaire was aimed at ascertaining the opinion of administrators concerning the vocational programs, specifically in regards to the priorities to be improved and strengthened with funds under P.L. 98.524.

It was organized in two parts: I. General Information and II Opinions about funds assignment. It measures not only the opinion about vocational programs, but also the process of funds assignment from personnel who participated and from those who do not participate in the process.

The needs for funds assignment are measured in general categories and specifically by subcategories.

3.2. Administrators Questionnaire: Procedure - These questionnaires were submitted to the State Education for its administration.

4.1. Employers Questionnaire: Procedure - This instrument was organized in four areas: I. General Information, II. Skills and Occupational Requirements, III. Opinion about Vocational and Technical Education Programs of the Department, and IV. Coordination between the school and the Community. These areas are described as follows:

In the first part information is requested about the enterprise about the following:

- SIC or Standard Industrial Classification (Question 1)

- The employees composition in the enterprise (question 2-4)

The Second Part, Skills and Occupational Requirements, requests information about the academic preparation and the training required by the enterprise for hiring of personnel.

In Part III, "Opinion about Vocational and Technical Education Programs", an evaluation from the employers is sought, specifically the evaluation is aimed at the programs sponsored by the Puerto Rico Department of Education. This section is not completed by those employers who indicate in question 1 that they do not know these programs or that indicate on question 15 that they do not employ graduates from said programs. (Question 14). In these cases employers were asked to move on to section IV.

In Part IV of this instrument "Coordination between the School and the Community" an evaluation is also requested concerning this type of coordination. It requires an in-depth analysis on how the relationship of the school and the community can be established and in what areas will the enterprise collaborate with the school.

4.2. Employers Questionnaire: Procedure - The person in charge of the hiring and/or selection of personnel in the enterprises was interviewed. It could be the owner, administrator, manager, or personnel manager or anybody who has such delegation of authority.

The following are some definitions that were used in relation to the employers questionnaire:

graduate: The individual who has completed the degree referred to in the evaluation.

skilled: Personnel who is required training, specifically in skills of the occupation.

technical: Personnel who requires technical training for employment.

administrative: That personnel who works in administrative tasks.

III. RESULTS BY GROUPS

Results by Groups

1.0 Identification of Teachers Needs

1.1. Curriculum

The results obtained in the evaluation of the curriculum are presented below according to each specific area evaluated. These results are presented on Table 1.1, but are summarized as follows.

1.1.1. The majority of the teachers (83%) evaluated that the classes they taught follow a logical sequence.

1.1.2. A total of 58% of the teachers expressed that they never teach classes for which they do not have adequate preparation, although 18% indicated that it happens always, or sometimes.

1.1.3. A majority of 92% expressed that they considered the needs and limitations of students.

1.1.4. The teachers expressed that always (55%) or sometimes (38%) the time devoted to the practical aspect of the learning is sufficient or adequate.

1.1.5. The teachers indicated that always (67%) or sometimes (32%) the time used for the theoretical aspects was sufficient or adequate.

1.1.6. The daily hours for classes were considered as sufficient always by 52% and sometimes by 39%.

1.1.7. The level of complexity of the classes taught was considered to be adequate always by 56% or sometimes by 42%.

1.1.8. The total classes that are required of the students in order to complete the vocational course was always considered adequate by 57% or sometimes by 31%.

1.1.9. The majority or 68% expressed that the course they taught is always aimed at the specific skills of the occupation.

1.1.10. A majority of 65% indicated that the course they taught is always aimed at the general skills of the occupation, which is in contrast to the opinion expressed in the previous item.

1.1.11. A total of 78% indicated that the vocational course taught is always oriented towards a combination of specific and general skills.

1.1.12. The majority of the teachers considered that never (49%) or as not applicable (38%) that the vocational course is not oriented neither to the development of specific nor generall skills of the occupation.

1.1.13. A total of 80% expressed that the curriculum of the course has been the subject of evaluation and revision always (33%) sometimes (47%).

1.1.14. A total of 84% expressed that the vocational course they teach has been adapted to the needs of the world of work (always 37% and sometimes 47%).

1.1.15. In regards to their participation in the revision and evaluation of the vocational course taught, 46% expressed never to participate, and 32% indicated that only sometimes they have participated.

1.1.16. A total of 57% expressed that curriculum content of the course taught always (47%) or sometimes (10%) include material that should be eliminated.

1.1.17. The majority expressed that always (58%) or sometimes (33%) the curricular content of the course include only essential material.

1.1.18. The majority of the teachers indicated that never (51%) or only sometimes (32%) they receive orientation or information from a curriculum specialist.

1.1.19. A total of 62% expressed that the curriculum provides for the integration of work experiences for the students in cooperative educationn programs, although 38% expressed that it was never provided or to be not applicable.

1.1.20. The majority or 56% expressed that the curriculum of the course always provides for individualized learning.

1.1.21. According to the majority of the teachers (59%) the curriculum of the course taught always provide for small groups teaching.

1.1.22. The majority (77%) of the teachers indicated that the curriculum of the course always provide for the integration of theoretical and practical aspects.

Table 1.1

	Total	Always		Sometimes		Never		Not Applicable	
		f	%	f	%	f	%	f	%
1.1.1 The vocational class taught always follows a logical sequence.	143	119	83	19	13	-	-	5	3
1.1.2 Teach classes for which they lack adequate experience or academic preparation.	143	5	3	22	15	83	58	33	23
1.1.3 In my classes I consider the specific limitations and needs of the students.	146	134	92	12	8	-	-	-	-
1.1.4 The time devoted to the practical aspect in class is adequate and sufficient.	146	81	55	56	38	7	5	2	1
1.1.5 The time devoted to the theoretical aspect is adequate and sufficient.	146	98	67	46	32	1	1	1	1
1.1.6 The daily hours devoted to the teaching of classes are sufficient.	145	76	52	56	39	5	3	8	6
1.1.7 The level of complexity of my classes is adequate for my students.	143	80	56	60	42	2	1	1	1

Table 1.1

	Total	Always		Sometimes		Never		Not Applicable	
		f	%	f	%	f	%	f	%
1.1.8 The total number of classes required to complete the vocational course are sufficient.	144	82	57	44	31	3	2	15	10
1.1.9 The vocational course taught is oriented towards specific skills of the occupation.	145	98	68	31	21	1	1	15	10
1.1.10 The vocational course taught is oriented towards general skills of the occupation.	142	92	65	34	24	2	1	14	10
1.1.11 The course taught is oriented towards a combination of specific and general skills of the occupation.	144	112	78	22	15	-	-	10	7
1.1.12 The course taught is oriented neither to specific nor general skills of the occupation.	142	9	6	10	7	69	49	54	38
1.1.13 The curriculum of the course taught has been the subject of evaluation and revision.	143	47	33	67	47	19	13	10	7

Table 1.1

	Total	Always		Sometimes		Never		Not Applicable	
		f	%	f	%	f	%	f	%
1.1.14 The curriculum of the course taught has been adapted to the real conditions of the world of work.	146	54	37	69	47	7	5	16	11
1.1.15 I have participated in the revision and evaluation of the course taught.	146	24	16	46	32	67	46	9	6
1.1.16 The content of the curriculum includes material that should be eliminated.	145	14	10	68	47	36	25	27	19
1.1.17 The content of the curriculum includes only essential material for the occupation.	145	84	58	48	33	1	1	12	8
1.1.18 Information and orientation is provided by the curriculum specialist.	143	16	11	46	32	73	51	8	6
1.1.19 The curriculum of the course provides for the integration of cooperative education experiences for the student.	145	52	36	37	26	25	17	31	21

Table 1.1

	Total	Always		Sometimes		Never		Not Applicable	
		f	%	f	%	f	%	f	%
1.1.20 The curriculum of the course provides for individualized learning.	146	82	56	51	35	10	7	3	2
1.1.21 The curriculum of the course provides for small groups teaching.	146	16	59	55	38	4	3	1	1
1.1.22 The curriculum of the course provides for the integration of theoretical and practical aspects.	146	113	77	30	21	1	1	2	1

1.2. Methodology and the Teaching Learning Process

The results of the evaluation of Methodology and the Teaching Learning Process are provided on Table 1.2 and summarized as follows:

1.2.1. The teaching in the theoretical classes according to 70% of the teachers are sometimes offered in the form of conferences.

1.2.2. The teaching in the skills development classes are always provided in the form of laboratories according to a majority of 61% of the teachers

1.2.3. A total of 91% of teachers considered that always group sizes are adequate, while 44% expressed that they are only sometimes adequate.

1.2.4. The school always provides (50%) or sometimes (25%) opportunities to conduct work experiences in real work settings according to teachers.

1.2.5. The form used to evaluate students is always adequate according to 66% of the teachers.

Table 1.2 Needs in Methodology and the Teaching Learning Process - Teachers

	Total	Always		Sometimes		Never		Not Applicable	
		f	%	f	%	f	%	f	%
1.2.1 The teaching in the theory classes are provided in the form of conferences.	145	41	28	101	70	3	2	-	-
1.2.2 The teaching in the skills development classes are provided in the form of laboratories.	146	89	61	44	30	1	1	12	8
1.2.3 The group size in the skills development classes are adequate.	144	64	44	68	47	7	5	5	3
1.2.4 The school provides opportunities for conducting work experience in real work settings.	146	73	50	37	25	19	13	17	12
1.2.5 The form used to evaluate student progress is adequate.	146	96	66	50	34	-	-	-	-

1.3. Materials, Equipment, Tools and the Physical Plant

The results of these areas of the evaluation are presented on Table 1.3 and the most important findings are presented as follows:

1.3.1. The school only sometimes provide the materials, equipment, and tools necessary for the occupation, according to the majority of the teachers.

1.3.2. Teachers' opinion concerning if the school provides information about the use of equipment, materials and tools were divided. They ranged from always with 41%, 38%, and 35% respectively to sometimes.

1.3.3. Equipment, tools and materials were found to be in adequate conditions for use only sometimes (48%, 62%, and 53% respectively) according to teachers.

1.3.4. The quantity of equipment, tools and materials available for use by each student was sufficient only sometimes (46%, 53% and 57% respectively) according to the teachers. A significant percentage of teachers reported that they are never available (21%, 29% and 28% respectively).

1.3.5. Equipment, tools and materials available only are adequate sometimes for the skills expected of the occupations according to 45%, 53%, and 51% respectively of the teachers.

1.3.6. In terms of access, the majority of the teachers surveyed considered that always equipment, tools and materials are located in an accessible location for use according to 64%, 73% and 67% respectively.

1.3.7. The majority of the teachers considered that materials, equipment, and tools sometimes are obsolete (57%, 60%, and 51% respectively.

1.3.8. A total of 53% of the teachers expressed that never are learning modules provided for each student. Also 38% indicated that never are text books provided, and 51% expressed that progress reports are also never provided for student use, but 39% indicated that they in fact provided.

1.3.9. The opinion regarding the provision of audiovisual materials for classroom use were divided since 48% expressed that never they are provided, while 48% provided answers which were between sometimes (34%) and always (14%).

1.3.10. A total of 42% of the teachers considered that only sometimes the space provided in classrooms a laboratories is adequate, although 43% considered that always it is adequate. The number of students assigned by classroom only sometimes is adequate according to the teachers.

1.3.11. A total of 53% of the teachers considered that the facilities of the schools only sometimes are in good conditions and 47% expressed also that only sometimes they found the school to be a safe place.

1.3.12. In terms of access, 95% of the teachers expressed that their schools were located in an accessible area, and 65% expressed to have easy access to all the premises of the schools. Thirty two percent (32%) expressed that only sometimes (25%) they are provided access or never (7%).

Table 1.3 Needs Assessment related to Equipment, Materials, Tools and the Physical Facilities - Teachers

	Total	Always		Sometimes		Never		Not Applicable	
		f	%	f	%	f	%	f	%
1.3.1 The school provides the tools necessary for the occupation.	146	38	26	76	52	6	4	26	18
The school provides the materials necessary for the occupation.	145	29	20	86	59	22	15	8	6
The school provides the equipment necessary for the occupation.	145	34	23	89	61	13	9	9	6

Table 1.3 Tools, Equipment, Materials and Physical Facilities Needs - Teachers

	Total	Always		Sometimes		Never		Not Applicable	
		f	%	f	%	f	%	f	%
1.3.2 The school provides information about tools use.	145	60	41	47	32	11	8	27	19
The school provides information about equipment use.	144	54	38	64	44	15	10	11	8
The school provides information about materials use.	144	51	35	64	44	20	14	9	6
1.3.3 The tools are in adequate conditions for their use.	145	40	28	70	48	9	6	26	18
The equipment is in adequate conditions for its use.	146	39	27	91	62	12	8	4	3
The materials are in adequate conditions for their use.	144	54	38	77	53	10	7	3	2
1.3.4 There are enough tools for each student´s use.	146	24	16	67	46	30	21	25	17
There is enough equipment for each student´s use.	146	21	14	78	53	42	29	5	3
There are enough materials for each student´s use.	145	20	14	82	57	40	28	3	2

Table 1.3 Tools, Equipment, Materials and Physical Facilities Needs - Teachers (Cont.)

	Total	Always		Sometimes		Never		Not Applicable	
		f	%	f	%	f	%	f	%
1.3.5 The tools available are adequate for developing the occupation's required skills.	146	46	32	65	45	9	6	26	18
The equipment available is adequate for developing the occupation's required skills.	146	43	29	78	53	17	12	8	5
The materials available are adequate for developing the occupation's required skills.	145	52	36	74	51	12	8	7	5
1.3.6 Tools are accessible for their use.	146	93	64	25	17	3	2	25	17
Equipment is accessible for its use.	146	107	73	34	23	2	1	3	2
Materials are accessible for their use.	144	96	67	36	25	10	7	2	1
1.3.7 Tools are obsolete.	142	8	6	81	57	23	16	30	21
The available equipment is obsolete.	141	15	11	84	60	29	21	13	9
Materials are obsolete.	139	9	6	71	51	44	32	15	11

Table 1.3 Tools, Equipment, Materials and Physical Facilities Needs - Teachers (Cont.)

	Total	Always		Sometimes		Never		Not Applicable	
		f	%	f	%	f	%	f	%
1.3.8 Instructional modules are provided for each student's use.	144	11	8	39	27	77	53	17	12
Texts are provided for each student.	143	22	15	58	41	55	38	8	6
A progress chart is provided for each student's use.	142	56	39	27	19	44	31	15	11
Texts are provided for each student.	145	20	14	50	34	69	48	6	4
1.3.9 Audiovisual materials are provided for classroom's use.	145	20	14	50	34	69	48	6	4
1.3.10 Classrooms and laboratories space is adequate.	146	63	43	62	42	21	14	-	-
The number of students assigned to each classroom is adequate.	146	55	38	83	57	8	5	-	-
1.3.11 The school or vocational center is safe	145	64	44	68	47	13	9	-	-
School facilities are in good conditions.	145	42	29	977	53	25	17	1	1

Table 1.3 Tools, Equipment, Materials and Physical Facilities Needs - Teachers (Cont.)

	Total	Always		Sometimes		Never		Not Applicable	
		f	%	f	%	f	%	f	%
1.3.12 The school location is accessible to students.	144	137	95	7	5	-	-	-	-
I have access to all school facilities.	146	977	66	37	25	10	7	2	1

1.4. Students Services

Results pertaining teacher's opinion about student's services are offered from two perspectives: first, it was determined in a general form the services provided to the students, and second, a more specific evaluation was obtained related to some of these services.

1.4.1. The services that according to the majority of the teachers are provided to the students are the following:

- counseling (90%)
- work and study (57%)
- economic assistance (79%)
- transportation (84%)
- recreational activities (63%)
- lunch (98%)
- individualized instruction (55%)

The services that according to the majority of the teachers are not provided are the following:

- tutorial services (60%)
- medical services (63%)
- tools and equipment adequate to the physical condition of students (71%)
- participation in cooperative programs (43%)

1.4.2. The majority of teachers expressed that the counseling office always provides the following services:

- orientation about the courses offered by the school (72%)
- occupational counseling materials available to the students (54%)
- information about employment opportunities (46%)
- preparation for job interview (42%)
- information about the classes required for the courses (61%)

Nevertheless, a majority (54%) expressed that only sometimes they are satisfied with the students services offered by the school.

Table 1.4 Students Services Provision - Teachers

	Total	Yes		No		Not Applicable	
		f	%	f	%	f	%
1.4.1 Tutorial Services	146	59	40	87	60	-	
Counseling Services	146	132	90	14	10		
Work and Study	146	83	57	63	43	-	
Economic Assistance	146	115	79	31	21	-	
Transportation	146	122	84	24	16	-	
Recreational activities	146	92	63	54	37	-	
Lunch	146	143	98	3	2	-	
Individualized instruction	146	80	55	66	45	-	
Medical Services	146	54	37	92	63	-	
Tools and equipment adequate to the physical condition of students	146	42	29	104	71	-	
Student's participation in cooperative education programs.	138	40	29	60	43	38	28

Table 1.4 Students Services Provision - Teachers

	Total	Always		Sometimes		Never		Not Applicable	
		f	%	f	%	f	%	f	%
The student receives orientation about all the courses offered by the school or vocational center.	145	104	72	32	22	6	4	3	2
The counseling office has occupational counseling materials available for student´s use.	144	78	54	50	35	7	5	9	6
The counseling office offers the students information about available working opportunities.	145	67	46	50	34	16	11	12	8
The counseling office prepares the students for a working interview.	142	60	42	51	36	17	12	14	10
The counseling office offers the students information about the required classes for the courses.	143	87	61	42	29	6	4	8	6
I am satisfied with the student´s services offered by the school or vocational center where I teach.	146	52	36	79	54	13	9	2	1

1.5. Administration, Supervision, Professional Development and Coordination with the Community

Results obtained pertaining these aspects are presented integrated in two areas. First, principal findings related to administration, supervision and professional development are summarized and then specific data is presented on Tables 1.5.1 - 1.5.3. Second, principal findings related to the coordination with the community are summarized, and then, specific data is presented on Table 1.5.4.

1.5.1. In relation to supervision, the majority of teachers considered that always (38%) or sometimes (50%) their classes are supervised. A majority of 75% expressed that always (36%) or sometimes (39%) they receive assistance from their assigned supervisor, although a significant per centage expressed that they never receive assistance from their assigned supervisor. In the same manner, teachers expressed that always (47%) or at least sometimes (39%) their work as vocational teachers are evaluated with adequate frequency; although nine per cent (9%) indicated that they never are evaluated.

1.5.2. Teacher´s opinion about their participation in activities related to professional development and student assessment fluctuated between sometimes (51% and 53% respectively) and always (40% and 27%).

1.5.3. The assistance provided by the school to the teachers turned out to be adequate sometimes (48%) and always (47%). Seventy-seven per cent (77%) expressed that always (32%) or sometimes (45%) they are provided with the necessary student´s evaluation materials, although a high per cent (21%) indicated that never they are provided with such materials. The majority (58%) expressed that only sometimes the school takes care of problems that affect their work as teachers.

1.5.4. In respect to the coordination with the community, the opinion of the majority of the teachers is the following:

. Always (32%) or sometimes (41%) the school provides the opportunity to participate in activities related to coordination with the community, although a considerable per cent (24%) indicated that they never have that opportunity.

. Never (36%) or only sometimes (43%) they participate in meetings of advisory committees with the necessary frequency.

. Only sometimes (58%) or never(16%) the school participates in activities coordinated with the community in general.

. Only sometimes (63%) the school receives the necessary support and assistance from the community it serves.

Table 1.5.1 Supervision - Teachers

	Total	Always		Sometimes		Never		Not Applicable	
		f	%	f	%	f	%	f	%
Receive supervision visits in your classes with the adequate frequency.	146	56	38	73	50	17	12	-	-
Your work as a vocational teacher is evaluated with the adequate frequency.	145	68	47	56	39	13	9	8	6
Receive assistance from the assigned supervisor with the adequate frequency.	146	52	36	57	39	33	23	4	3

Table 1.5.2 Professional Development - Teachers

	Total	Always		Sometimes		Never		Not Applicable	
		f	%	f	%	f	%	f	%
Receive adequate training about student´s assessment techniques.	146	39	27	77	53	29	20	1	1
Participation in professional development activities with the necessary frequency according to your needs.	144	58	40	74	51	12	8	-	-

Table 1.3.3 **Administration - Teachers**

	Total	Always		Sometimes		Never		Not Applicable	
		f	%	f	%	f	%	f	%
The administration of your school or vocational center offers the adequate assistance to do your work.	145	68	47	69	48	7	5	1	1
The school take adequate care of the problems that affect your work as a teacher.	146	50	34	85	58	11	8	-	-
Adequate student's assessment materials are provided.	145	46	32	65	45	31	21	3	2

Table 1.5.4 Coordination with the Community

	Total	Always		Sometimes		Never		Not Applicable	
		f	%	f	%	f	%	f	%
The school provides opportunities to participate in activities related to coordination with the community.	145	47	32	59	41	35	24	4	3
Participation in advisory committee meetings with the necessary frequency.	144	27	19	62	43	52	36	3	2
The school participates in activities coordinated with the community in general.	146	35	24	85	58	24	16	2	1
The school receives adequate support and assistance from the community it serves.	146	37	25	93	64	15	10	1	1

1.6. Conclusions and Recommendations

According to the results obtained in the vocational teacher's inquiry, Table 1.6 follows with the areas that require attention, as well as the recommendations pertaining to each one.

Table 1.6. Summary of Results and Recommendations to Serve the Needs of the Vocational Teachers

Need Area	Specific Aspect in Need of Attention	Recommendations
Curriculum	- Participation of teachers in curriculum revision and evaluation	- To create a consulting mechanism for the participation of teachers in curriculum revision similar to the academic senates in higher education
	- Curriculum content includes material that ought to be deleted	- Revision of curriculum in line with the recommendations made in the labor supply and demand section of this report
	- Lack of technical assistance from the curriculum specialist	- To prepare an itinerary of visits by semesters for the curriculum specialist to serve the needs of all teachers
Tools, equipment, materials and physical facilities	- Tools, equipment and materials are not adequate and obsolete	- To plan the allocation of funds on a five year plan in priority order according to the programs in greater demand and stability (See Labor Supply and Demand Section of this Report).
	- Lack of Materials	- To develop methods to promote self learning and to use progress charts
Administration, supervision and professional development	- Lack of assistance from supervisors and attention to teachers problems	- To provide in service trainings to supervisory personnel related to new approaches in the supervision as professional development

Coordination with the community	- Lack of adequate coordination with the community	- To organize in the schools activities for people to attract them to collaborate with the schools. For instance, activities of recognition, orientations or training that can be coordinated with students clubs and organizations

2.0. Identification of the Student Needs

2.1. Introduction

The students participating in this needs study provided information in general areas of the curriculum: Areas in which they should receive training, but was not provided to them at the time of the study, degree of satisfaction and aspirations concerning the vocational program selected, and the organization of the courses.

The results of the needs assessment in the area of curriculum are presented in detailed form on Tables 2.2.1, 2.2.2 and 2.2.3. These results, are summarized as follows:

2.2. Curriculum -

Results Table 2.2.1. Needs in the Curricular Area

The organization of the curriculum were in general found to be satisfactory according to the students included in the sample. (See Tables 2.2.1.1., 2.2.1.3 and 2.2.1.5 thru 2.2.1.10) The only exception found was when the students indicated the following:

(2.2.1.4) In spite that 48% of the students surveyed indicated that their needs and limitations are considered in their courses, 44% expressed that this never occurred (28%) or only sometimes (16%).

In other specific areas examined in the study of the vocational programs needs, no information was obtained to justify a negative assessment as seen on Table 2.2.1, Sections 2.2.1.1. thru 2.2.1.10.

Table 2.2.1 Curriculum Needs - Students

	Total	Always		Sometimes		Never		Not Applicable	
		f	%	f	%	f	%	f	%
2.2.1.1 The classes of the vocational course where I am enrolled, follow an adequate logic sequence.	524	345	66	156	30	17	3	6	1
2.2.1.2 The content of the classes that I take follows an adequate logic sequence.	523	337	64	165	32	14	3	7	1
2.2.1.3 I have taken some classes or a class that I think I wasn't prepared enough to take it (or them).	522	58	11	98	19	312	60	54	10
2.2.1.4 My particular limitations and needs have been considered in the classes that I have taken.	521	252	48	83	16	145	28	41	8
2.2.1.5 The time of the course that I am enrolled is adequate.	521	356	68	89	17	53	10	23	4
2.2.1.6 The time assigned to practical aspects of the curse is adequate.	516	317	61	130	25	51	10	18	3

Table 2.2.1 Curriculum Needs - Students

	Total	Always		Sometimes		Never		Not Applicable	
		f	%	f	%	f	%	f	%
2.2.1.7 The time assigned to theoretical aspects of the course is adequate.	518	319	62	159	31	34	7	6	1
2.2.1.8 Daily class schedule is adequate.	520	370	71	115	22	25	2	10	2
2.2.1.9 The classes that I have taken at present are adequate.	521	414	79	85	16	16	3	6	1
2.2.1.10 The total number of classes required to complete the vocational course where I am enrolled is adequate.	522	366	70	102	20	39	7	15	3

Table 2.2.2. Curriculum - Level of Satisfaction - Students

2.2.2.1 The great majority or 81% of students expressed in their
2.2.2.2 evaluation of the curriculum to be satisfied with the
2.2.2.3 program selected. Also, the majority or 72% expressed that the course will be useful for them to find a job. Nevertheless, it is important to point out that although 68% of the students expressed that the courses were what they wanted and expected, thirty-three per cent (33%) expressed the courses were not too much (23%) or nothing (10%) of what they wanted and expected.

Table 2.2.2. Curriculum - Level of Satisfaction - Students

	Total	Very Much		Not too Much		Nothing	
		f	%	f	%	f	%
2.2.2.1. - Satisfaction with the vocational course where the student is enrolled.	516	417	81	81	16	18	3
2.2.2.2. The vocational course that I selected will be useful to find a job.	519	375	72	114	22	30	6
2.2.2.3 The vocational course that I selected is what I wanted and expected.	517	350	68	117	23	50	10

Table 2.2.3. Evaluation of the Skills Learned

Students expressed that in their courses, they learn both the specific and general skills of the occupation by a majority of 60%. It is significant, however, to point out that 2% of the students expressed that they do not learn neither specific nor general skills of the occupation. Likewise, it is also important to notice that 24% expressed that they generally learn specific skills, while 14% indicated that they generally learn general skills.

Table 2.2.3. Evaluation of the Skills Learned

2.2.3. Evaluation of the Course in which I am Enrolled

	TOTAL
TOTAL	511
Learn generally specific skills	122 f 24%
Learn generally general skills	73 f 14%
Learn specific and general skills in the same proportion	305 f 60%
Do not learn specific nor general skills	11 f 2%

Table 2.2.4. Curriculum - Evaluation of Content and Organization - Students

2.2.4.1 The majority or 63% of the students surveyed indicated that there are areas in which they should be trained, but that are not, at present.

2.2.4.2 Eleven per cent (11%) of the students indicated that they need training in oral communications in Spanish.

2.2.4.3 Ten per cent (10%) indicated to need training in written communication in Spanish.

2.2.4.4
2.2.4.5 Significantly, 38% indicated that they require training in oral English, while 30% expressed their need in terms of written communication in English.

2.2.4.6 A total of 21% expressed to need, but do not receive training in mathematics.

2.2.4.7 A significant group (19%) indicated to need training in human relations, but do not receive it.

2.2.4.8 More than one third or 35% of the students expressed to need training in how to establish a business.

2.2.4.9 The majority of the students indicated not to require additional training on specific skills.

Table 2.2.4 Curriculum - Content and Organization Evaluation - Students

	TOTAL	YES		NO	
		f	%	f	%
2.2.4.1 There are some areas where the students should be trained, and is not trained.	518	327	63	191	37
2.2.4.2 Areas where the student should be trained and is not trained: oral communication in Spanish.	522	68	11	462	89
2.2.4.3 Areas where the student should be trained and is not trained: written communication in Spanish.	523	52	10	471	90
2.2.4.4 Areas where the student should be trained and is not trained: oral communication in English.	523	197	38	326	62
2.2.4.5 Areas where the student should be trained and is not trained: written communication in English.	523	155	30	368	70
2.2.4.6 Areas where the student should be trained and is not trained: mathematics.	522	110	21	412	79
2.2.4.7 Areas where the student should be trained and is not trained: human relations.	523	101	19	422	81

Table 2.2.4 Curriculum - Content and Organization Evaluation - Students (Cont.)

	TOTAL	YES		NO	
		f	%	f	%
2.2.4.8 Areas where the student should be trained and is not trained: how to establish their own business.	523	183	35	340	65
2.2.4.9 Areas where the student should be trained and is not trained: specific skills.	520	42	8	340	92

Table 2.2.5 Level of Satisfaction with the Skills and Instruction

The majority or sixty eight per cent (68%) of the students expressed that the skills and instruction received in their vocational program are what they expected. It is important to point out that thirty-three per cent (33%) of the students expressed that their level of satisfaction is not too much and others answered nothing (8%) to this question.

Table 2.2.5 Curriculum - Content and Organization Evaluation - Students

	Total	Very Much		Not too Much		Nothing	
		f	%	f	%	f	%
2.2.5.1 The skills and instruction received are what the student expected to receive	518	351	68	128	25	39	8

Table 2.3.1. Tools - Students

2.3.1.1 The majority of the students expressed that only sometimes the
2.3.1.2 necessary tools are provided and thirteen per cent (13%) expressed that never the necessary tools are provided. Nevertheless, the majority or 54% expressed that always information about tools used is provided. Significantly, ten per cent (10%) expressed that this information is never provided.

2.3.1.3 The great majority or 57% expressed that never (13%) or only sometimes (44%) tools are in adequate conditions for its use.

2.3.1.4 The majority or 63% of students expressed that never (26%) or only sometimes (37%) there are enough tools for each student´s use.

2.3.1.5 A significant group of students or 49% expressed that never (11%) or only sometimes (38%) tools are adequate for developing the expected skills.

2.3.1.6 The majority of the students (53%) expressed that tools were accessible.

2.3.1.7 A majority of 60% expressed that never (16%) or only sometimes (44%) tools are obsolete.

Table 2.3.1 Tools - Students

	Total	Always		Sometimes		Never		Not Applicable	
		f	%	f	%	f	%	f	%
2.3.1.1 The school provides the necessary tools for practice.	519	182	35	207	40	69	13	61	12
2.3.1.2 The school provides information about tools use.	518	279	54	134	26	50	10	55	11
2.3.1.3 Tools are in adequate conditions for their use.	519	159	31	226	44	66	13	68	13
2.3.1.4 There are enough tools for each student´s use.	519	119	23	194	37	136	26	70	13
2.3.1.5 Available tools are adequate for developing the required skills.	517	199	38	198	38	59	11	61	12
2.3.1.6 Tools are accessible for their use.	517	275	53	136	26	43	8	63	12
2.3.1.7 Available tools are obsolete.	517	132	26	226	44	83	16	76	15

Table 2.4.1 Equipment - Students

2.4.1.1 The great majority or 57% expressed that never (11%) or only sometimes (46%) equipment for practice is provided.

2.4.1.2 A significant group or 42% expressed that never (9%) or only sometimes (33%) information about equipment use is provided.

2.4.1.3 The majority or 50% expressed that only sometimes the equipment is in adequate conditions.

2.4.1.4 The great majority or 76% of students interviewed expressed that never (25%) or only sometimes (51%) there is enough equipment for each student´s use.

2.4.1.5 A considerable high per cent (59%) expressed that never (12%) or only sometimes (47%) equipment is adequate for developing the expected skills.

2.4.1.6 The majority (57%) expressed that the equipment was always available for its use.

2.4.1.7 The great majority (75%) of students gave negative responses relevant to the quality of equipment; twenty-eight per cent (28%) expressed that it always was old and forty-seven per cent (47%) expressed that sometimes it was old.

Table 2.4.1 Equipment - Students

	Total	Always f	Always %	Sometimes f	Sometimes %	Never f	Never %	Not Applicable f	Not Applicable %
2.4.1.1 The school provides the equipment necessary for practice.	517	199	38	239	46	58	11	21	4
2.4.1.2 The school provides information about equipment use.	518	283	55	172	33	46	9	17	3
2.4.1.3 Equipment is in adequate conditions for its use.	519	173	33	257	50	66	13	23	4
2.4.1.4 There is enough equipment for each student's use.	522	103	20	264	51	132	25	23	4
2.4.1.5 The available equipment is adequate for developing the required skills.	521	199	38	244	47	62	12	16	3
2.4.1.6 The equipment is in a place accessible for its use.	519	297	57	167	32	39	8	16	3
2.4.1.7 The available equipment is old.	518	144	28	246	47	98	19	30	6

Table 2.5.1 - Materials - Students

2.5.1.1 The majority of the students indicated that always they are provided materials for their practice. Significantly, 14% expressed that this never occurred.

2.5.1.2 A significant group or 44% expressed that either never (9%) or only sometimes (35%) they are provided with information about the use of materials.

2.5.1.3 A considerable group or 63% indicated that never (12%) or only sometimes (51%) the educational materials are in adequate conditions for their use.

2.5.1.4 The vast majority of the students, or 75% indicated that never (29%) or only sometimes (46%) there is sufficient materials for the use of each student.

2.5.1.5 The majority of the students or 59% expressed that only sometimes (48% or never (11%) the materials available were adequate for the skills expected.

2.5.1.6 A considerable group or 39% of the students indicated that only sometimes the materials were accessible.

2.5.1.7 The majority of the students or 54% indicated that sometimes the materials for their use were obsolete, but 23% expressed that this never happened.

2.5.1.8 The majority indicated that always (62%) they are provided
2.5.1.9 materials in Spanish, but 38% said that they are provided modules.

2.5.1.10 Twenty two per cent expressed that never textbooks are provided, while 37% indicated that they are provided only sometimes.

2.5.1.11 A significant group (30%) indicated that progress charts are provided in classes.

2.5.1.12 The majority or 50% expressed that never audiovisual materials are provided for their use.

Table 2.5.1 Materials - Students

	Total	Always		Sometimes		Never		Not Applicable	
		f	%	f	%	f	%	f	%
2.5.1.1. The school provides the materials necessary for the practice.	521	178	34	251	48	72	14	20	4
2.5.1.2 The school provides information about the use of the materials.	519	276	53	181	35	49	9	13	3
2.5.1.3 The materials are in adequate conditions for my use.	518	179	35	264	51	62	12	13	3
2.5.1.4 There are materials in sufficient quantities for the use of each student.	519	111	21	241	46	150	29	17	3
2.5.1.5 The materials available are adequate for the skills expected.	520	206	40	247	48	55	11	12	2
2.5.1.6 The materials are located in an accessible location for my use.	514	256	50	203	39	45	9	10	2
2.5.1.7 The materials available for my use are old.	520	118	23	282	54	97	19	23	4

Table 2.5.1 Materials - Students (Cont.)

	Total	Always		Sometimes		Never		Not Applicable	
		f	%	f	%	f	%	f	%
2.5.1.8 The materials (written) are provided to me in Spanish.	520	321	62	165	32	29	6	5	1
2.5.1.9 Learning modules are provided to me.	519	197	38	173	33	120	23	29	6
2.5.1.10 Textbooks are provided to me.	521	188	36	195	37	116	22	22	4
2.5.1.11 A progress chart for my use is provided.	522	185	35	140	27	157	30	40	8
2.5.1.12 Audio visual materials are provided for my use in the classroom.	520	67	13	165	32	258	50	30	6

Table 2.6.1 Physical Facilities - Students

2.6.1.1 The majority or 48% of the students expressed that space
2.6.1.2 in classrooms and laboratories was adequate. Additionally they expressed that the number of students assigned per classroom was also adequate (57%).

2.6.1.3 A significant group or 12% of students expressed that never the physical facilities of the school were in good conditions.

2.6.1.4 Significantly, 48% indicated that never (11%) or only sometimes (37%) the school was safe.

2.6.1.5 Eight per cent (8%) indicated to have easy access to their schools and 30% expressed that only sometimes.

2.6.6.6 The majority or 52% said that never (26%) or only sometimes (26%) are equipment and tools adapted to their conditions provided.

Table 2.6.1 Physical Facilities - Students

	Total	Always f	Always %	Sometimes f	Sometimes %	Never f	Never %	Not Applicable f	Not Applicable %
2.6.1.1 The space provided in classrooms and laboratories is adequate.	520	251	48	189	36	71	14	9	2
2.6.1.2 The number of students assigned per room is adequate.	521	297	57	184	35	37	7	3	1
2.6.1.3 The physical facilities of my school are in good conditions.	519	138	27	227	44	142	27	12	2
2.6.1.4 The school or vocational center where I study is safe.	519	257	50	194	37	58	11	10	2
2.6.1.5 I have easy access to my school.	520	316	61	156	30	40	8	8	2
2.6.1.6 I have been provided the following services in my school: tools and equipment specially adapted to my physical conditions.	507	191	38	133	26	130	-	-	-

2.7 Student Services - Needs According to Students

The students included in this study expressed divided opinions concerning the services provided at the different vocational education centers or schools. The results of the needs assessment relevant to the student services are presented on Tables 2.7.1, 2.7.2, 2.7.3 and are summarized as follows:

Results of Table 2.7.1 - Student Services

2.7.1.1 A significant group (45%) of the students expressed that only sometimes (36%) or never (9%) they were satisfied with the services provided to them.

2.7.1.2 Sixty percent (60%) of the students indicated that only sometimes or never they have received orientation on how to prepare themselves for the employment interview.

2.7.1.3 The majority of the students (54%) expressed to have received orientation about the classes required to complete the vocational course.

2.7.1.4 Fifty six percent of the students expressed that only sometimes or never the orientation office have the materials necessary for orientation.

2.7.1.5 Only 34% indicated to have received orientation about employment opportunities in line with their own capacities.

2.7.1.6 The majority or 68% indicated to receive tutoring either sometimes or never.

2.7.1.7 Only 29% of the students expressed that "always" they receive individualized assistance in their schools.

2.7.1.8 The majority (89%) indicated that they are recipients of the school lunch service.

2.7.1.9 The majority of the students (53%) indicated that only sometimes or never are recreational activities provided.

2.7.1.10 The students by a great majority (57%) expressed that they always received transportation services.

2.7.1.11 Only 28% indicated that scholarships are always provided.

2.7.1.12 The majority (61%) indicated that they have never (39%) participated or only sometimes (22%) in work and study experiences.

2.7.1.13 Only 38% of the students sampled expressed that always they received orientation services.

2.7.1.14 The majority or 72% indicated to have received medical services either sometimes (28%) or never (44%).

2.7.1.15 Only 40% expressed that they always receive information on how to prepare their resumes.

TABLE 2.7.1 STUDENT SERVICES - NEEDS ACCORDING TO STUDENTS

	Total	Always		Sometimes		Never		Not Applicable	
		f	%	f	%	f	%	f	%
2.7.1.1 Is satisfied with the services provided by the school or center.	512	271	53	186	36	47	9	8	2
2.7.1.2 The orientation office has provided orientation about: how to prepare for an employment interview.	518	185	36	140	27	171	33	22	4
2.7.1.3 The orientation office has provided orientation about: classes necessary to complete the vocational program.	517	281	54	149	29	62	12	25	5
2.7.1.4 The orientation office has orientation materials for my use.	518	211	41	203	39	87	17	17	3
2.7.1.5 The orientation office has provided orientation about: employment opportunities according to my capabilities.	519	174	34	165	32	152	29	28	5
2.7.1.6 The school provides tutorial services.	487	108	22	102	21	229	47	48	10
2.7.1.7 The school or center has provided individualized assistance.	493	142	29	206	42	121	25	24	3

TABLE 2.7.1 STUDENT SERVICES - NEEDS ACCORDING TO STUDENTS - (cont.)

	Total	Always		Sometimes		Never		Not Applicable	
		f	%	f	%	f	%	f	%
2.7.1.8 The school or center provides school lunch service.	509	454	89	34	7	16	3	5	1
2.7.1.9 The school or center provides recreational activities.	499	219	44	182	36	83	17	15	3
2.7.1.10 The school or center provides transportation services.	508	292	57	44	9	133	26	39	8
2.7.1.11 The school or center provides scholarships.	499	140	28	49	10	260	52	50	10
2.7.1.12 The school or center provides work and study services.	500	159	32	112	22	193	39	36	7
2.7.1.13 The school or center provides services in counseling and orientation.	504	194	38	176	35	120	24	14	3
2.7.1.14 The school or center provides medical services.	497	99	20	138	28	221	44	39	8
2.7.1.5 The school or center provides information on how to prepare a resume.	509	209	40	138	27	146	29	19	4

Results of Table 2.7.2

2.7.2.1 The majority of the students expressed to have received orientation before selecting their vocational courses.

2.7.2.2 The majority of the students were not interested in other vocational course before selecting the one in which they are enrolled.

2.7.2.3 A significant majority of the students (63%) indicated that they were not administered tests of vocational interests or aptitudes to select a vocational course.

2.7.2.4 Eleven percent (11%) of the students changed their vocational choices after the provision of orientation about another choice which was of greater interest to them.

2.7.2.5 Four percent (4%) of the students changed their vocational option because they considered to lack the required skills and abilities for it.

2.7.2.5 The majority or 97% of the students did not receive biased orientation which may have caused them to change their options based on sex stereotyping.

2.7.2.7 Only 3% of the students expressed to have received orientation which discriminated in career selection because of age.

2.7.2.8 The majority or 98% did not express to receive orientation which discriminated in career choice because of marital status.

2.7.2.9 The majority or 98% did not express to have received orientation in career selection because of having children.

2.7.2.10 No evidence was found in the majority of the students (99%) that there was discrimination in orientation services because of any physical handicapped.

2.7.2.11 The majority (97%) of the students indicated that no orientation was provided which may have made them to discriminate in career choice because of ecomonic conditions.

TABLE 2.7.2 STUDENTS SERVICES - NEEDS ACCORDING TO STUDENTS

	Total	Yes		Not Applicable	
		f	%	f	%
2.7.2.1 I received orientation about all the courses offered by the school before making a selection.	521	384	74	137	26
2.7.2.2 I was interested in another vocational course before selecting the one in which enrolled.	515	60	12	455	88
2.7.2.3 The counselor administered a vocational interest or aptitude test when selecting vocational course.	519	193	37	326	63
2.7.2.4 I changed my vocational choice because: Received information about another occupation which was of more interest to me.	524	57	11	467	89
2.7.2.5 I changed my vocational choice because: I considered not to have the skills or aptitudes needed.	524	20	4	504	96
2.7.2.6 I changed my vocational choice because: I received orientation that the course was not adequate for a person of my sex.	524	17	3	507	524

TABLE 2.7.2 STUDENTS SERVICES - NEEDS ACCORDING TO STUDENTS - (cont.)

	Total	Yes		Not Applicable	
		f	%	f	%
2.7.2.7 I changed my vocational choice because: I received orientation that the course was not adequate for a person of my age.	524	16	3	508	97
2.7.2.8 I changed my vocational choice because: I received orientation that the course was not adequate for a married person.	524	13	2	511	98
2.7.2.9 I changed my vocational choice because: I received orientation that the course was not adequate for a person with children.	524	8	2	516	98
2.7.2.10 I changed my vocational choice because: I received orientation that the course was not adequate for a person with a physical handicapped.	523	7	1	516	99
2.7.2.11 I changed my vocational choice because: I received orientation that the course was not adequate for a person with limited economic resources.	524	16	3	508	97

Results of Table 2.7.3

2.7.3.1 The majority or 78% of the students indicated that there was no influence (44%) or little (34%) from previous experiences in their career choices.

2.7.3.2 The majority (51%) expressed that the orientation received in the school influenced little (32%) or none (19%) in their career selection.

2.7.3.3 The majority (56%) of the students indicated that in their selection of the vocational choice, employment opportunities influenced little or nothing.

2.7.3.4 The majority (58%) expressed that their personal abilities influenced a great deal in their vocational choices.

2.7.3.5 A great majority or 61% expressed that in their career choices their personal preferences influenced "much".

2.7.3.6 The students by a great majority (54%) expressed that family advise have no influence (26%) or little (28%) in their career choices.

TABLE 2.7.3 STUDENTS SERVICES

	Total	Very Much		Not too Much		Nothing	
		f	%	f	%	f	%
2.7.3.1 Situations which influenced the vocational choice: Previous work experience	478	107	22	163	22	208	44
2.7.3.2 Situations which influenced the vocational choice: Orientation received in the School	490	241	49	155	32	94	19
2.7.3.3 Situations which influenced the Vocational choice: Employment Opportunities	487	212	44	124	25	151	31
2.7.3.4 Situations which influenced the Vocational choice: Personal Skills	488	282	58	149	31	57	12
2.7.3.5 Situations which influenced the Vocational choice: Personal preference	483	297	61	112	23	74	15
2.7.3.6 Situations which influenced the Vocational choice: Family advice	478	221	46	133	28	124	26

Table 2.8.1 - Teaching Methodology-Students

2.8.1.1 The majority or 75% of the students expressed that teachers were
2.8.1.2 well prepared in the occupations taught and in the specific skills
2.8.1.3 of those occupation. Likewise they indicated that teachers exhibit experiences in the occupations taught.

2.8.1.4 A significant group or 53% of the students expressed that only sometimes (46%) or never (7%) they received individualized assistance from the teachers.

2.8.1.5 A significant group (53%) of the students indicated that never (8%) or only sometimes (45%) they receive special assistance in small groups when necessary.

2.8.1.6 Although the majority (54%) expressed that theoretical learning is provided in groups of adequate size, 7% indicated that it never happened.

2.8.1.7 Seven percent (7%) of the students said that never the groups sizes in skills classes were adequate.

2.8.1.8 A total of 32% of the students expressed that always the class of knowledge related to the occupation is provided in conference form.

2.8.1.9 A majority or 65% of the students informed that sometimes (47%) or never (18%) are classes offered in laboratory form.

2.8.1.10 Significantly the majority of students or 50% indicated that never (14%) or only sometimes (26%) the school provides opportunities to conduct the occupational practice.

2.8.1.11 The majority or 67% of the students indicated that their progress in class was adequately evaluated.

TABLE 2.8.1 TEACHING METHODOLOGY - STUDENTS

	Total	Always		Sometimes		Never		Not Applicable	
		f	%	f	%	f	%	f	%
2.8.1.1 The teachers in the program are well prepared in the content taught.	519	389	75	112	22	14	3	4	1
2.8.1.2 Teachers of occupational skills know the occupations related to those skills.	521	389	75	116	22	10	2	6	1
2.8.1.3 Teacher of the occupational skills demostrate work experience in the occupation.	522	387	74	114	22	16	3	5	1
2.8.1.4 Teachers of the occupation provide individualized assistance.	520	244	47	239	46	34	7	3	1
2.8.1.5 Teachers provide assistance in small groups, if necessary.	519	237	46	234	45	43	8	5	1
2.8.1.6 The teaching of theory related to the occupation is provided in adequate group sizes.	520	280	54	196	38	36	7	8	2
2.8.1.7 The size of the groups in skills classes are adequate.	519	293	56	185	36	35	7	6	1

TABLE 2.8.1 TEACHING METHODOLOGY - STUDENTS - (cont.)

	Total	Always		Sometimes		Never		Not Applicable	
		f	%	f	%	f	%	f	%
2.8.1.8 The teaching of skills and knowledge related to the occupation is provided in conference form.	520	164	32	255	49	91	18	10	2
2.8.1.9 Classes are offered in the form of work-shops.	516	162	31	245	47	91	18	18	3
2.8.1.10 The school provides opportunities to conduct occupational practice in the world of work.	517	244	47	186	36	72	14	15	3
2.8.1.11 My academic progress is adequately evaluated.	517	346	67	137	26	29	6	5	1

Table 2.9 Summary of Results and Recommendations to serve the students needs.

Area of Need	Aspect that Requires Attention	Recommendations
Curriculum	Degree of satisfaction of students	To integrate more work experiences in the form of cooperative education in order that students know better their future occupational world. To incorporate from the beginnings of courses, information on a systematic form about the relevancy of the teaching in the world of work.
	Balance between theoretical and specific/practical learning	To promote in service training for teachers about teaching methodology in vocational education. To create training units by region and program as a pilot project.
	Diversification of the occupational curriculum	To provide all students of vocational education with a curricular unit related to the formation and development of a small business. This effort should be articulated especially through students enterprises. It is also recommended that short term curricular units in remedial oral and written English and Spanish Communications, be introduced as well as in human relations and business mathematics. Also recommended is the incorporation of educational materials that provide students with roles (or models) of the different occupations that they may perform after completion of their studies.

Area of Need	Aspect that Requires Attention	Recommendations
Tools, Equipment, Materials, and Physical Facilities.		
	Obsolescence and lack of materials, equipment and tools	
		It is recommended that funds be assigned in a phase-by-phase emergency fashion for these areas. A study to determine how to incorporate the private sector as a partner in the process through tax-free donations may be useful in this case. It is also recommended that in a priority order, an examination of all current laws and legal dispositions or rules be conducted to provide for the smoothness and quickness of the procurement of tools and equipment. It is also proposed to create the necessary mechanism and strategies to promote the "adoption" of schools or programs by industry and business in order that they contribute more effectively in providing tools and equipment. Also recommended is the articulation of a plan for the renovation of the physical plant through programs sponsored by the Right to Employment Administration and the Office of Human Development of the Commonwealth.
Student Services	Orientation and counseling	The hiring of additional counselors, specialized to serve the clientele of vocational programs is recommended. The allocation of

Area of Need	Aspect that Requires Attention	Recommendations
		funds for the acquisition and administration of diagnostic tests of vocational interests is strongly recommended. Also recommended is the incorporation and use of orientation materials on how to prepare a resume and on the employment interview. The creation of regional units (or at the district level) of occupational orientation, for the preparation of occupational orientation materials, and their dissemination are advised. It is also suggested that an Island-Wide orientation campaign about the employment opportunities available to vocational education graduates be implemented.

3.0 Results - Policy Makers and Administrators of the Department of Public Education.

The questionnaire administered to administrators and policy makers of the vocational programs measures their perceptions about the priority areas according to the needs for funds assignment in five general categories and eleven specific subcategories. A description of the most relevant results follows and more detailed information is also provided on Table 3.1.1. thru 4.2.4.

3.1 Categories

3.1.1 Objectives of the Program: The majority (83%) of administrative personnel expressed that priority should be placed on occupational programs of vocational education of the Department of Education (See Table 3.3.1).

3.1.2 Level: The level of the greatest need for funds assignment was the secondary, according to 64% of the persons surveyed. The one identified of the lowest need or last priority was the adult level. (See Table 3.1.2).

3.1.3 Clientele: The clientele which must be given higher priority in funds assignment was the regular student, and secondly were the disadvantaged. Third priority were the handicapped, while adults and out-of-school youth was the fourth, according to the personnel surveyed. (See Table 3.1.3).

3.1.4 Type of school: The type of school of greatest need for funds assignment was the area vocational school, according to 39% of those administrators surveyed. However, 25% expressed that the priority should be placed on the academic high school with vocational offerings. (See Table 3.1.4).

3.1.5 Budget Category: The results of the survey indicated that the budget category which should be given higher priority is the student services. Other categories such as professional development, and curriculum were found in a second place. The third priority was divided between materials, equipment and laboratories. (See Table 3.1.5)

3.2 Categories

3.2.1 Student Services: Although employment service was found to be the subcategory of this area identified as the first priority by 40% of those surveyed, the orientation services were classified as a great priority by 36% of the people surveyed. Scholarships, transportation and student organizations were identified as equal in priority, and located as the third priority for funds assignment. (See Table 3.2.1)

ADMINISTRATIVE PERSONNEL - DEPARTMENT OF EDUCATION NEEDS ASSESSMENT OF VOCATIONAL AND TECHNICAL EDUCATION PROGRAM

Table 3.1.1 OBJECTIVE OF THE PROGRAM

	Total	Rank
Total Responses	29	
Occupational	24 f 83 %	1
Non Occupational	5 f 17%	2

ADMINISTRATIVE PERSONNEL - DEPARTMENT OF EDUCATION NEEDS ASSESSMENT OF VOCATIONAL AND TECHNICAL EDUCATION PROGRAM
(cont.)

Table 3.1.2 LEVEL

	Total	Rank
Total Responses	28	
Intermediate	5 f 18 %	2
Secondary	18 f 64 %	1
Postsecondary	4 f 14 %	3
Adult	1 f 4 %	4

ADMINISTRATIVE PERSONNEL - DEPARTMENT OF EDUCATION NEEDS ASSESSMENT OF VOCATIONAL AND TECHNICAL EDUCATION PROGRAM
(cont.)

Table 3.1.3 CLIENTELE

	Total	Rank
Total Responses	29	
Handicapped	3 f 10 %	3
Adults	2 f 7 %	4
Disadvantaged	6 f 21 %	2
Regular	16 f 55 %	1
Out of School Youth	2 f 7 %	4

ADMINISTRATIVE PERSONNEL - DEPARTMENT OF EDUCATION NEEDS ASSESSMENT OF VOCATIONAL AND TECHNICAL EDUCATION PROGRAM (cont.)

Table 3.1.4 TYPE OF SCHOOL

	Total	
Total Responses	28	
		Rank
High School with Academic Offerings	7 f 25 %	2
High School with Vocational Dept.	2 f 7 %	4
Area Vocational School	11 f 39 %	1
Technological Institute	2 f 7 %	4
Specialized Centers	3 f 11 %	3
Others	3 f 11 %	3

ADMINISTRATIVE PERSONNEL - DEPARTMENT OF EDUCATION NEEDS ASSESSMENT OF VOCATIONAL AND TECHNICAL EDUCATION PROGRAM (cont.)

Table 3.1.5 BUDGET CATEGORY

	Total	Rank
Total Responses	30	
Student Services	6 f 20 %	1
Professional Development	4 f 13 %	2
Curriculum	4 f 13 %	2
Materials	3 f 10 %	3
Equipment	3 f 10 %	3
Shops	3 f 10 %	3
Classrooms	1 f 3 %	5
Support Facilities	1 f 3 %	5
New Programs	2 f 7 %	4
Administration	2 f 7 %	4
Research	1 f 3 %	5

ADMINISTRATIVE PERSONNEL - DEPARTMENT OF EDUCATION NEEDS ASSESSMENT OF VOCATIONAL AND TECHNICAL EDUCATION PROGRAM (cont.)

Table 3.2.1 PRIORITIES FOR STUDENT SERVICES (EXPENSES)

	Total	Rank
Total Responses	25	
Scholarships	2 f 8.00 %	3
Transportation	2 f 8.00 %	3
Orientation	9 f 36.00 %	2
Employment Services	10 f 40.00 %	1
Student Organizations	2 f 8.00 %	3
Medical Services	0 f 0 %	0
Others	0 f 0 %	0

3.2.2 Professional Development: In service training was the area to which the greatest sum of funds should be assigned within the professional development category according to the majority or 60% of administrative personnel surveyed. Table 3.2.2 details other areas of priority identified by this group.

3.2.3 Curriculum: The majority of the persons surveyed (54%) expressed that priority should be placed in the development of new curricula. (See Table 3.2.3)

3.2.4 Materials: The great majority (76%) identified the acquisition of materials as the first priority. (See Table 3.2.4)

3.2.5 Equipment: On table 3.2.5 it is observed that acquisition of equipment was identified as first priority according to the majority of those surveyed. (70%)

3.2.6 Shops and Laboratories: The renovation and maintenance of shops and laboratories was found to be the first priority in this subcategory according to a majority of 71% of the administrative personnel surveyed. (See Table 3.2.6)

3.2.7 Classrooms: In this subcategory also renovation and or maintenance was identified as a first priority according to 77%. (See Table 3.2.7)

3.2.8 Physical Facilities: According to 59% of those surveyed the learning resources centers is the first priority. The second priority was found to be the construction of new centers. This constitutes the learning resources center as the area of greatest need within the physical facility category. (See Table 3.2.8)

3.2.9 New Programs: A total of 64% expressed that the establishment of new programs should be the first priority. (Table 3.2.9)

3.2.10 Administration: The strengthening of the local level was the only first priority identified in this category. Other areas shared in different levels of priority rating according to Table 3.2.10.

3.2.11 Research: As seen on Table 3.2.11 the research area identified as first priority according to the personnel interviewed was follow-up and evaluation. Curriculum and teaching-learning process shared as the second priority.

ADMINISTRATIVE PERSONNEL - DEPARTMENT OF EDUCATION NEEDS ASSESSMENT OF VOCATIONAL AND TECHNICAL EDUCATION PROGRAM (cont.)

Table 3.2.2 PROFESSIONAL DEVELOPMENT (EXPENSES)

	Total	
Total Responses	25	
		Rank
Scholarships	1 f 4.00 %	4
Internships	4 f 16.00 %	3
Economic Assistance	5 f 20.00 %	2
In service training	15 f 60.00 %	1
Pre-service training	0 f 0 %	0
Others	0 f 0 %	0

Table 3.2.3 CURRICULUM - (EXPENSES)

	Total	
Total Responses	26	
		Rank
Development of New Curricula	14 f 54 %	1
Revision of Current Curricula	12 f 46 %	2

ADMINISTRATIVE PERSONNEL - DEPARTMENT OF EDUCATION NEEDS ASSESSMENT OF VOCATIONAL AND TECHNICAL EDUCATION PROGRAM (cont.)

Table 3.2.4 MATERIALS

	Total	Rank
Total Responses	25	
Acquisition of Materials	19 f 76 %	1
Development of Materials	6 f 24 %	2

Table 3.2.5 EQUIPMENT

	Total	Rank
Total Responses	27	
Acquisition of Equipment	19 f 70 %	1
Maintenance of Equipment	8 f 30 %	2

Table 3.2.6 SHOPS AND LABORATORIES

	Total	Rank
Total Responses	21	
Reparation and Maintenance	15 f 71.43 %	1
Construction	6 f 28.67 %	2

ADMINISTRATIVE PERSONNEL - DEPARTMENT OF EDUCATION NEEDS ASSESSMENT OF VOCATIONAL AND TECHNICAL EDUCATION PROGRAM (cont.)

Table 3.2.7 CLASSROOMS

	Total	Rank
Total Responses	22	
Reparation and Maintenance	17 f 77.27 %	1
Construction	5 f 22.73 %	2

Table 3.2.8 PHYSICAL FACILITIES TO SUPPORT THE TEACHING - LEARNING PROCESS

	Total	Rank
Total Responses	17	
To improve the Learning Resources Center	10 f 59 %	1
To construct a new center	4 f 23 %	2
To improve Administrative Offices	2 f 12 %	3
To construct new administrative office	1 f 6 %	4

ADMINISTRATIVE PERSONNEL - DEPARTMENT OF EDUCATION NEEDS ASSESSMENT OF VOCATIONAL AND TECHNICAL EDUCATION PROGRAM (cont.)

Table 3.2.9 NEW PROGRAMS

	Total	
Total Responses	19	
		Rank
Expansion of new Programs to other areas	7 f 37 %	2
Development of new programs	12 f 64 %	1

Table 3.2.10 ADMINISTRATION

	Total	
Total Responses	21	
		Rank
Strengthen the Central Level	3 f 14.29 %	2
Strengthen the Regional Level	2 f 9.52 %	3
Strengthen the Local Level	7 f 33.33 %	1
Reduced the Central Level	1 f 4.76 %	4
Reduced the Regional Level	1 f 4.76 %	4
Strengthen the Central and Reduced the Regional	1 f 4.76 %	4

ADMINISTRATIVE PERSONNEL - DEPARTMENT OF EDUCATION NEEDS ASSESSMENT OF VOCATIONAL AND TECHNICAL EDUCATION PROGRAM (cont.)

Table 3.2.10 ADMINISTRATION - (cont.)

	Total	Rank
Strengthen the Regional and Reduced the Central	2 f 9.52 %	3
Strengthen the local and Reduced the Central	2 f 9.52 %	3

Table 3.2.11 Research (Areas of Study)

	Total	Rank
Total Responses	19	
Planning	2 f 10.52 %	3
Curriculum	5 f 26.32 %	2
Teaching and Learning process	5 f 26.32 %	2
Follow up and Evaluation	7 f 36.84 %	1
Others	0 f 0 %	0

4.0 Employers Needs and their Perceptions of the Vocational Programs of the Department of Education

In this section of the study of the vocational programs needs, it is determined what are the needs of said programs in terms of their quality according to employers, and the capacity of the Department to meet the expectations of employers.

The specific questions from the employers questionnaires discussed herein measure these employers needs and their perceptions about these programs.

4.1 Employers' Needs

4.1.1 Skills

The majority of employers (49%) indicated that those individuals seeking employment with them should master technical skills as a first priority. The second, third and fourth priorities fall within the area of skills related to attitudes such as good habits (20%), honesty (12%) and punctuality (8%). On Table 4.1.1 it can be observed that communication in English (3%) shares the sixth place with good relations with fellow workers (3%) which indicates that employers identified as convenient an employer with a comprehensive preparation. This is observed when they prioritized both technical and other skills such as those related to attitudes.

4.1.2 Academic Preparation

When employers were asked if they prefer university preparation although it was not required for a specific position, the majority or 58% expressed a negative response. This fact is very important since it is against the concept that university preparation is always superior to any other, thus establishing vocational education as an alternative for quality educational programs in Puerto Rico.

The type of preparation preferred by the majority of employers interviewed, for those employers whose academic preparation is less than the university level, was that of the vocational programs of the public schools (67%) and of the technological institutes programs of the public school (56%). (See Table 4.1.2)

Table 4.1.2 presents data to indicate that employers, besides preferring this level of academic preparation, also preferred the programs of the Department of Education. The majority expressed that they do not prefer graduates from programs sponsored by the municipalities and/or the Right to Employment Administration (57%) or graduates of private vocational schools (55%).

It is important to notice that 62% expressed that they prefer employers trained by the same enterprise which confirms that a great deal of the necessary training is conducted by the employers. This is confirmed by the fact that although there is a marked preference for graduates of the Department´s Vocational Programs, 82% of the employers expressed that they provide training to graduates of these programs. It is necessary to conduct a study of these trainings in order to determine what programs must be created to meet this need. The availability of employers to participate in the study is demonstrated when 93% of them expressed that the private sector should participate in the planning and development of vocational programs. If this disposition is compared to the present situation in which little or no coordination exists with the vocational programs (Table 4.1.3), it is advised that new strategies and mechanism to provide such participation be studied.

4.2 Perception of Employers - Vocational Programs of the Department of Education

The perception and opinions obtained from the employers were obtained to the greatest extent from those acquainted with public vocational education in Puerto Rico (65%) and from those who currently employ graduates from these programs (53%).

4.2.1 Level of satisfaction with performance of employees who are graduates of the vocational programs of the Department.

The great majority (94%) of the employers indicated that they were satisfied with the performance of the graduates. (See Table 4.2.1)

4.2.2. Skills of the Graduates of Vocational Education Programs

Table 4.2.7 also reveals that 83% of the employers expressed that graduates of the vocational education programs of the Department have the skills expected from them by the enterprises.

EMPLOYERS - NEEDS ASSESSMENT OF VOCATIONAL PROGRAMS

Table 4.1.1 Description of Skills to be mastered by those Interested in Working in those enterprises included in the Sample

	Total
Total Responses	200
Technical Skills	97 f 49 %
Communication in Spanish	7 f 4 %
Communication in English	6 f 3 %
Good Health	40 f 20 %
Punctuality	15 f 8 %
Honesty	24 f 12 %
Good Relationship with fellow workers	6 f 3 %
Good Character	2 f 1 %
Others	3 f 2 %

EMPLOYERS - NEEDS ASSESSMENT OF VOCATIONAL PROGRAMS

Table 4.1.2 Training Program Preferred for Employers whose Preparation is below the university level

Program	Total Responses	Yes f	Yes %	No f	No %
Preference for graduates of vocational programs at the high school level	182	122	67	60	33
Preference for graduates of public technological institutes	176	99	56	77	44
Preference for graduates of public academic high schools	173	97	56	76	44
Preference for graduates of trainings provided by Municipalities and the Right to Employment Administration	171	73	43	98	57
Preference for graduates of private vocational schools	169	76	45	93	55
Preference for trainees of the enterprise	176	109	62	67	38

EMPLOYERS - NEEDS ASSESSMENT OF VOCATIONAL PROGRAMS

Table 4.1.3 Relationship between the Enterprise and Vocational Education Programs

Category	Total Responses	Yes f	Yes %	No f	No %
Orientation from the Enterprise in the school	197	25	13	172	87
Orientation from the school at the enterprise	164	11	7	153	93
Donation of equipment by the enterprise	161	10	6	151	94
Participation of enterprises in advisory committees	162	8	5	154	95
Participation of enterprises in program planning	162	6	4	156	96
Others	164	10	6	154	94
No relationship	187	150	80	37	20

EMPLOYERS - NEEDS ASSESSMENT OF VOCATIONAL PROGRAMS

Table 4.2.1 Opinion about the Vocational Technical Educational Evaluation Programs of the Department of Education

Category	Total Responses	Yes f	Yes %	No f	No %
Satisfied with the performance of graduates	79	74	94	5	6
Graduates exhibit the skills expected from them	78	65	83	13	17

4.2.3 Comparison of graduates of vocational programs performance with that of non graduates.

When the performance of employees who are graduates of the Department's vocational education programs is compared to the performance of non graduates, the majority of employers (53%) expressed that the execution of the first group was superior to that of the latter group. (Table 4.2.3)

4.2.4 Degree of Satisfaction with the students employed through the Cooperative Education Program.

It is necessary to indicate that the majority of the employers surveyed (89%) at the time of the study were not employing students under the cooperative education program. However, the employers, who had these students employed indicated by a great majority (73%) that their level of satisfaction was high. None of the employers indicated that their level of satisfaction was poor and 27% gave a "regular" evaluation. (See Table 4.2.4)

EMPLOYERS - NEEDS ASSESSMENT OF VOCATIONAL PROGRAMS

Table 4.2.3 Comparison of performance between graduates and non-graduates of Vocational Programs

Category	Total Responses	f	%
Superior to non graduates	77	41	53
Equal	77	29	38
Less than non graduates	77	7	9

Table 4.2.4 Degree of Satisfaction with the Performance of Students, Under the Cooperative Education Program

Category	Total Responses	f	%
High	11	8	73
Regular	11	3	27
Poor	0	0	0

IV. OCCUPATIONAL SUPPLY AND DEMAND BY VOCATIONAL EDUCATION PROGRAM

A. Supply and Demand by Program

1.0 Vocational Agriculture

1.1 Department of Education Enrollments Projections

The Vocational Agriculture Program plans to provide offerings for a total of 5,985 students during 1987-88 in three occupational clusters, as described on Table 1.0.

1.2 Current and Projected Supply and Demand

The data available at the P.R. Department of Labor revealed a current demand of 1,349 positions in these occupations. Data obtained from the survey conducted by Clapp and Mayne, Inc. and the survey carried out by PROICC, both projected at five years, revealed a demand of 1,150 and 3,299 respectively.

1.3 Recommendations

The enrollment should be reduced or stabilized in the occupations taught by the Vocational Agriculture Program.

Offerings in this program should be aimed at self-employment providing students incentives for these purposes.

Those courses to be oriented toward self employment should include a component aimed at the development of skills necessary for such purpose such as:

- marketing techniques
- basic accounting
- credit
- financing a small enterprise
- small business administration

It is also recommended that specialized centers for self employment be created in specific areas.

1.0 VOCATIONAL AGRICULTURE

Offerings, Present Demand and Projected Demand by Course, Occupation and Rank

Offerings			Present Demand			Projected Demand					
Projected Enrollment DIP 87-88			Labor Department			Clapp and Mayne, Inc.			PROICC		
Course	Enroll.	Rank	Occupation	Demand	Rank	Occupation	Demand	Rank	Occupation	Demand	Rank
1. Agricultural Production, Animal Prod. Horticulture, Aquaculture, Aviculture	5,740	1	1. Farm Workers	1,234	1	1. Farmer, Horticulturist, Aviculturist	1,080	1	1. Farmer, Silviculturist and others	3,294	1
			2. Agricultural Machines Operators	115	2	2. Agronomist, Farm Managers, Agricultural Supervisors, Dairy Managers	70	2	TOTAL	3,294	
			TOTAL	1,349							
2. Agricultural Mechanics	215	2									
3. Dairy Management	30	3									
TOTAL	5,985					TOTAL	1,150				

2.0 Health Related Occupations Program

2.1 Enrollments Projections

The Puerto Rico Department of Education plans to serve 2,045 students in seven occupations of this program. (See Table 2.0) Of this total, the majority of the trainings are projected in nursing (810), allied health occupations (585), practical nursing, and medical office assistant.

2.2 Current and Projected Demand

The survey conducted by Clapp and Mayne presents as the first priority the demand for graduate nurses. This information coincided with the data obtained from PROICC which also presents this occupation as the first priority. (See Table 2.0)

2.3 Recommendations

1) The data concerning occupational demand points out as a priority the preparation of nurses at the postsecondary or bachelor levels. It is recommended that this offering be move up to the postsecondary level and that enrollments be kept at approximately 500 to 600 students.

2) It is recommended the consolidation of health related occupation in specialized centers at the postsecondary level to serve regional needs. These centers may serve to consolidate these occupations, except nursing. It is also recommended that these centers keep total enrollments at approximately 1,500 students. Also recommended is to establish these centers in accordance to the geographical areas determined by the Department of Health.

2.0 HEALTH RELATED OCCUPATIONS PROGRAM

Offerings, Present Demand and Projected Demand by Course, Occupation and Rank

Offerings			Present Demand			Projected Demand					
Projected Enrollment DIP 87-88			Labor Department			Clapp and Mayne, Inc.			PROICC		
Course	Enroll.	Rank	Occupation	Demand	Rank	Occupation	Demand	Rank	Occupation	Demand	Rank
1. Nursing, Other	810	1	0	0	0	1. Graduate Nurses	550	1	1. Graduate Nurses	501	1
2. Allied Health	585	2				2. Hospital's Work	450	2			
3. Practical Nursing, Medical Assistant	540	3				3. Dental Assistant	400	3			
4. Pharmacy Assistant	50	4				4. Sterile Supplies Assistant	100	4			
5. Surgical Technology	45	5				5. Surgical Assistant	100	4			
6. X-Rays Technology	15	6				6. Respiratory Therapy Technician	30	5			
TOTAL	2,045					7. X-Rays Technician	30	5			
						8. Veterinary Assistant	10	6			
						TOTAL	1,670				

3.0 Business Education

3.1 Projected Enrollments

This program intends to serve a total enrollment of 13,912 in essentially three occupational clusters as seen on Table 3.0.

3.2 Current and Projected Demand

The survey of Clapp and Mayne projects a demand of 6,370 positions during the next five years. This number agrees with the data obtained from the PROICC study. (See Table 3.0) The projections of the supply in this program clearly are greater than the demand data available.

3.3 Recommendations

1. It is recommended to reduce between 20% to 30% in the enrollments. This reduction is recommended particularly in the bookkeeping and accounting courses at the secondary level. The tendency observed is towards greater demand for personnel in accounting at the higher education level.

2. Also recommended is to gradually move ten percent of the offerings to the postsecondary level. The data available indicates this trend.

3. It is recommended to reorient the bookkeeping courses towards the postsecondary level and to add to it the use of computers.

4. Likewise, the incorporation as a requirement of Word Processing in all clerical courses, is recommended.

3.0 BUSINESS EDUCATION

Offerings, Present Demand and Projected Demand by Course, Occupation and Rank

Offerings			Present Demand			Projected Demand					
Projected Enrollment DIP 87-88			Labor Department			Clapp and Mayne, Inc.			PROICC		
Course	Enroll.	Rank	Occupation	Demand	Rank	Occupation	Demand	Rank	Occupation	Demand	Rank
1. Business Education, Secretarial, General Office Clerk	9,412	1	1. Secretary	615	1	1. Typist, General Office Clerk, Clerk-Typist Assistant, Secretary, Receptionist, Shorthand Spec., File Clerk	5,200	1	1. Typist, General Office Clerk, Clerk-Typist Assistant, Secretary, Receptionist, Shorthand Spec., File File	7,225	1
2. Accounting, Bookkeeping	4,480		2. Bilingual Secretary	18	2	2. Accountant, Cashier, Executive Assistant	570	2	2. Accountant, Cashier, Auditor	1,026	2
3. Medical Secretary	20		TOTAL	635		3. Accounting Assistant	260	3	3. Accounting Assistant	533	3
TOTAL	13,912					4. Executive Secretary	120	4	4. Telephonist	140	4
						5. Bank Assistant	100	5	TOTAL	8,924	
						6. Telephonist	100	6			
						7. Bilingual Secretary	20	7			
						TOTAL	6,370				

4.0 Technical Education

4.1 Enrollment Projections

The enrollment projections of the Department of Education was established at 2,275 in eight different occupational areas in this program.

4.2 Current and Projected Demand

Both the data obtained in the Clapp and Mayne survey and that from the PROICC study indicate that enrollment projections are below projected and current demand in this area. In the case of the Clapp and Mayne survey the demand was established at 5,180 and the PROICC study estimated it at 2,610.

4.3 Recommendations

1. It is recommended to increase the enrollment of technical education, specifically in EDP related areas.

2. Also, it is advised to reorient offerings at the technological institutes in order to specialize them in occupational areas to service specifically designed regions based on industry needs. For instance, the area of computers, electronics, chemistry and construction technology are recommended.

4.0 TECHNICAL EDUCATION

Offerings, Present Demand and Projected Demand by Course, Occupation and Rank

Offerings			Present Demand			Projected Demand					
Projected Enrollment DIP 87-88			Labor Department			Clapp and Mayne, Inc.			PROICC		
Course	Enroll.	Rank	Occupation	Demand	Rank	Occupation	Demand	Rank	Occupation	Demand	Rank
. Electrical Technology, Electronic Technology	1,039	1	. Electronics Technician	290	1	. Roads Maintenance	2,000	1	. Precision Machines Inspector, Projects Inspectors, Engineers, Electrical Engineers	1,488	1
			TOTAL	290		. Computer Programmer, Digital Technician	1,080	2			
. Computer Programming	272	2							. Computer Programmer, Digital Technician	482	2
. Instrumentation Technology	265	3				. Environmental Control Technician, Laboratory Technician	430	3			
. Paramedic Equipment Technology and Chemical Manufacturing	264	4				. Inspectors, Project's Supervisors, Engineers, Electrical Engineers	400	4	. Health Technician, Chemical Operator, Chemical Technician	267	3
. Mechanical Design Technology	220	5				. Tool and Dye Makers	260	5	. Designing Technician, Land-surveyors, Structural Designer, Mechanic Designer	157	4
. Civil Technology	110	6				. Technical Drafting, Construction Plans, Construction Plans Adjuster, Designer	250	6			
. Environmental Control Technology	70	7									
. Air Conditioning Technology	45	8									
TOTAL	2,275										

Offerings, Present Demand and Projected Demand by Course, Occupation and Rank

Offerings			Present Demand			Projected Demand					
Projected Enrollment DIP 87-88			Labor Department			Clapp and Mayne, Inc.			PROICC		
Course	Enroll.	Rank	Occupation	Demand	Rank	Occupation	Demand	Rank	Occupation	Demand	Rank
						. Chemical Operator, Chemical Technician	210	7	. Electrical and Electronic Technician, Basic Electronic, Digital Electronic, Industrial Electronic	153	5
						. Basic Electronic, Industrial Electronic Technician, Digital Electronic	130	8	. Mechanical Engineer	37	6
						. Plant Supervisor	80	9	. Tool Maker	21	7
						. Computer System Analist	50	10	. Industrial Technician, Mechanic	5	8
						. Production Supervisors	50	11	TOTAL		
						. Instrumentist	50	12			
						. Hangar Pilot	40	13			
						. Computer Analysts and Programmer	40	14			
						. Graphic Arts, Commercial Art	20	15			
						. Designer	20	16			

Offerings, Present Demand and Projected Demand by Course, Occupation and Rank

Offerings			Present Demand			Projected Demand					
Projected Enrollment DIP 87-88			Labor Department			Clapp and Mayne, Inc.			PROICC		
Course	Enroll.	Rank	Occupation	Demand	Rank	Occupation	Demand	Rank	Occupation	Demand	Rank
						. Typographer	20	17			
						. Land - Surveyors Assitants, Engineers Assitants	20	18			
						. Medical Technologist	10	19			
						. Mechanical Engineers	10	20			
						. Tool Maker	10	21			
						TOTAL	5,180				

5.0 Home Economics

5.1 This program revealed an enrollment projection of 1,455 to be trained in five occupational clusters. (Table 5.0)

5.2 Current and Projected Demand

All the data available from Clapp and Mayne studies, the Department of Labor, and PROICC indicate an increase in the demand for personnel specialized in food production and preparation. It is in this area that future employment opportunities should be projected. (See Table 5.0)

5.3 Recommendations

1. It is recommended to consolidate offerings relevant to food production and preparation in specialized centers to serve the needs of the business areas and tourism in Puerto Rico. In these centers it is recommended the strengthening of cooperative education at the postsecondary level.

2. Also recommended is to increase offerings in food production and preparation by 50% of current figures.

3. The gradual elimination of offerings where no demand is projected is also recommended.

4. The provision of courses in florists, interior decoration and senior citizen companions, but oriented to self employment and in short term courses for disadvantaged individuals through JTPA are recommended. Specifically, these can be organized in the Employment Training or Enterprenership program of the Right to Employment Administration.

5.0 HOME ECONOMICS

Offerings, Present Demand and Projected Demand by Course, Occupation and Rank

Offerings			Present Demand			Projected Demand					
Projected Enrollment DIP 87-88			Labor Department			Clapp and Mayne, Inc.			PROICC		
Course	Enroll.	Rank	Occupation	Demand	Rank	Occupation	Demand	Rank	Occupation	Demand	Rank
. Food Production and Services, Baking	954	1	. Food Services, Baker, Cook	171	1	. Janitor Maintenance, Services	3,710	1	. Food Services, Baker, Cook	2,617	1
. Child Care Assisting House Keeper	215	2	. House Keeper, Domestic, Dishwaser, Waiter, Waitress	86	2	. House Keeper, Domestic Service, Dishwasher, Waiters, Waitress	370	2	. House Keeper, Domestic Services, Dishwasher, Waiters, Waitress	1,221	2
. Floral Design	115	3	TOTAL	257		. Food Services, Baker, Cook	300	3	TOTAL	3,838	
. Interiors Decorating	113	4				. Waiter	70	4			
. Companion to the Aged	48	5									
TOTAL	1,455					TOTAL	3,910				

6.0 Marketing and Distribution Program

6.1 Enrollments Projections

The Department of Education plans to serve an enrollment of 7,290 students in this program in four occupational clusters. (See Table 6.0). The majority of these offerings are found in the high school and adult levels.

6.2 Current and Projected Occupational Demand

The data available at the Department of Labor, as well as the survey conducted by Clapp and Mayne and the PROICC study reveals that there is a demand or employment opportunities in Marketing and Distribution which is greater than current and projected enrollments. The Clapp and Mayne and PROICC surveys both reveal that the majority of these opportunity will be in areas related to the marketing and distribution of goods and services.

6.3 Recommendations

1. It is recommended to reorient enrollments to the adult level in postsecondary offerings.

2. It is recommended to consolidate technical offerings of this program in a center or institute in marketing and distribution education. This center will consolidate technical offerings in this economic sector. It is advised to develop this institute in the metropolitan area or adjacent to it.

3. It is recommended that new courses in this program be considered in areas related to transportation, communications and tourism.

4. Also it is recommended that offerings related to the distribution of foods stuff in supermarkets be organized in projects of cooperative education with enterprises in this sector.

6.0 MARKETING AND DISTRIBUTION

Offerings, Present Demand and Projected Demand by Course, Occupation and Rank

Offerings			Present Demand			Projected Demand					
Projected Enrollment DIP 87-88			Labor Department			Clapp and Mayne, Inc.			PROICC		
Course	Enroll.	Rank	Occupation	Demand	Rank	Occupation	Demand	Rank	Occupation	Demand	Rank
. Business Management, Fashion Merchandising, Entrepreneurship, Banking, Food Marketing, Recreation Marketing	3,360	2	. Stores Employees	502	1	. Packing, Demonstrator, Seller, Warehouse employees	2,560	1	. Sales, Sales related occupations	7,664	1
			. Driver	64	2				. Purchaser	3,652	2
			TOTAL	566		. Seller Assist. Carriers	930	2	. Production and Dispatch Coordinator	924	3
						. Cashiers, Publicity Agent Assistants, Dist., Grain Department Specialist	550	3	. Cargo Workers	913	4
. Sales	3,880	1									
. Credit Marketing	50	3							TOTAL	13,163	
TOTAL	7,290					. Business Management, Manager	380	4			
						. Industrial Sales Person, Broker	280	5			
						. Teller	200	6			
						. Credit Investigator	140	7			
						. Airport Transportation	50	8			
						. Collectors	50	9			

Offerings, Present Demand and Projected Demand by Course, Occupation and Rank

Offerings			Present Demand			Projected Demand					
Projected Enrollment DIP 87-88			Labor Department			Clapp and Mayne, Inc.			PROICC		
Course	Enroll.	Rank	Occupation	Demand	Rank	Occupation	Demand	Rank	Occupation	Demand	Rank
						. Newspaper Distribution	50	10			
						. Airplane Cargo	20	11			
						. Decorator	10	12			
						. Adjuster	10	13			
						TOTAL	7,230				

7.0 Vocational Industrial Program

7.1 Enrollments Projections

The enrollment projection of the Department of Education in this program is 15,673 students. The majority of the students will be in areas related to mechanics, electronics, and employment related to manufacturing which requires machine operations.

7.2 Current and Projected Demand

The information available reveals that this program is not enrolling at a level commensurate with current and projected demand. The Clapp and Mayne survey revealed a demand of more than 21,000 opportunities for the next five years. The PROICC study provided a demand of 21,495 for the same period.

It is observed that there is a significant discrepancy between supply and demand in this program since it offers a considerable number of occupations aimed at self employment and not at the needs of business and industry.

7.3 Recommendations

1. It is recommended that the program establishes offerings aimed at self employment in areas such as:

- cosmetology
- radio and television
- small home electric appliances repair
- plumbing
- appliances repair

2. It is also recommended that, to the extent possible, these offerings be reorganized exclusively towards self employment with the introduction of government subsidies.

3. Also recommended as a pilot project is the reorganization of the area vocational school to allow for the development of training centers specialized by occupational areas such as the different types of mechanics.

4. Also proposed is the creation of specialized centers in the following areas:

- mechanics: To provide training in the different areas of the mechanics and to serve specific regional needs. The curriculum may respond to the following:

- metal - mechanics
- electro mechanics
- auto mechanics

- electronics:

It is proposed to create regional centers in electricity and electronics. These centers must be organized in such a way that curriculum be organized in spiral form to respond to industry needs. These centers must provide training programs up from the skilled and the technical level on, but allowing for further professional development of participants.

7.0 VOCATIONAL INDUSTRIAL

Offerings, Present Demand and Projected Demand by Course, Occupation and Rank

Offerings			Present Demand			Projected Demand					
Projected Enrollment DIP 87-88			Labor Department			Clapp and Mayne, Inc.			PROICC		
Course	Enroll.	Rank	Occupation	Demand	Rank	Occupation	Demand	Rank	Occupation	Demand	Rank
. Mechanics, Diesel Mechanics, Engine Repair	2,436	1	. Machines Operators	1,201	1	. Machines Operators, Commercial Garment and Apparel Construction, Patterns Designers, Garments Seamstress Assistants, Heavy Equipment Operators. Packing Machine Operator, Fabric Cutter. Public Carriers	14,160	1	. Machine Operator	7,370	1
. Electrician, Industrial Electrician, Major Appliance Repair	2,257	2	. Carpenter	134	2				. Construction Supervisor	4,697	2
. Automobile Body Repair	1,104	4	. Solderer	110	3				. Engine Equipment Operator	3,775	3
. Millwork and Cabinet Making	988	5	. Joiner	87	4				. Mechanics	3,485	4
. Plumbing	930	6	. Industrial and Commercial Maintenance	43	5				. Welding Assistant, Metal Objects Maker	669	5
. Carpentry	900	7	. Bricklayer	30	6				. Electrician	386	6
. Architectural Drafting	890	8	. Furniture Maker	27	7				. Plumbers	357	7
. Welding	826	9	. Automobile Repair	27	7	. Line Operator	1,660	2	. Electronic Equipment Repair	309	8
. Refrigeration Mechanic	808	10	. Can Machine Operator	22	8	. Mechanics	1,070	3	. Painter, Automobile Body Repair	245	9
. Electronics, Radio, T.V.	496	12	. Plumber	16	9	. Industrial Maintenance	480	4	. Refrigeration, Air Conditioning	201	10
. Upholstering	279	14	. Diesel Mechanics	13	10	. Automobile Body Repair	450	5	. Maintenance Supervisor	1	11
			TOTAL	1,710		. Electrician Assistant	430	6	TOTAL	21,495	

7.0 VOCATIONAL INDUSTRIAL - (CONT.)

Offerings, Present Demand and Projected Demand by Course, Occupation and Rank

Offerings			Present Demand			Projected Demand					
Projected Enrollment DIP 87-88			Labor Department			Clapp and Mayne, Inc.			PROICC		
Course	Enroll.	Rank	Occupation	Demand	Rank	Occupation	Demand	Rank	Occupation	Demand	Rank
. Graphic and Printing Communications	234	15				. Electrician, Lineman, System Installer, Telephone Installer	400	7			
. Commercial Art	184	16				. Carpenter, Construction, Roof Sealer, Kitchen Cabinet Installer	380	8			
. Commercial Photography	180	17									
. Jewelry Design, Fabrication and Repair	147	18				. Can Machine Operator	350	9			
. Brickmasonry, Stonemasonry and Tile Setting General	136	19				. Welding Assistant	220	10			
						. Furniture Maker	210	11			
. Lithography, Photography and Platemaking	80	20				. Plumber	200	12			
						. Electric Mechanic	150	13			
. Aircraft Mechanics	41	22				. Front Alignment Specialist	140	14			
. Cosmetology	590	11									
. Barbering	311	13				. Commercial Garment and Apparel Construction Operators	110	15			

7.0 VOCATIONAL INDUSTRIAL - (CONT.)

Offerings, Present Demand and Projected Demand by Course, Occupation and Rank

Offerings			Present Demand			Projected Demand					
Projected Enrollment DIP 87-88			Labor Department			Clapp and Mayne, Inc.			PROICC		
Course	Enroll.	Rank	Occupation	Demand	Rank	Occupation	Demand	Rank	Occupation	Demand	Rank
. Commercial Garment and Apparel Construction, Custom Tailoring and Alteration	1,800	3				. Systems Installers	100	16			
						. Systems Installers Assistants	100	17			
						. Joiners	100	18			
. Baking	56	21				. Carpenter's Assistant	90	19			
TOTAL	15,673					. Refrigeration Technician	80	20			
						. Painter and Painter Assistant	80	21			
						. Joiners Supervisors	50	22			
						. Air Conditioning	50	23			
						. Joiner Technician	30	24			
						. Electrician Assistant	20	25			
						. Carpenter	20	26			
						TOTAL	21,130				

B. General Conclusions

1. The Vocational Industrial Program was revealed as the one with the greatest demand (current and projected) as seen in the results by ranks on Table 8.0. Likewise, the same program was found with the largest enrollments. However, in order to meet the demand, an enrollment increase can be planned. The courses that present the greatest possibilities were the following because of their potential for employment or self employment:

- machine operator
- industrial sewing
- mechanics
- welding
- auto body repair

Other courses that can also generate opportunities for self employment, if the curriculum is revised to include areas of marketing and small business skills, are the following:

- cosmetology and barber shop
- radio and television
- electronic appliances repair
- plumbing

2. The Vocational Agriculture program revealed a significant low demand. The exceptions were found in the current demand which was explained by the months in which data was examined (December to February) and because of the type of occupation, fruit picker, which indicated seasonal demand only. The enrollment of the program at the Department of Education was found to be significantly high, or approximately two to three times greater than the demand projected. (See Table 8.0). These courses require reduction in enrollments and reorientation toward self employment through the curricular change recommended in the analysis by program section of this study.

3. The business education program was found to be one with a high demand. However, the current enrollments were found to be excessive in terms of current and projected enrollments. The bookkeeping courses revealed enrollments that exceed from eight to nine times the projected demand. The clerical course although found in great demand, revealed an enrollment far greater than the demand (current and projected). It is necessary also to provide other skills necessary to adequately compete in the world of work.

4. The Marketing and Distribution Program was found to be of an average demand according to Clapp and Mayne and as high in demand according to the results of PROICC. However, enrollments should be stabilized or reduced. The occupations in greater demand in the program are those related to retail sales. The enrollment in the administration of small businesses can be

TABLE 8.0

Present Demand, Projected Demand and Offerings by Programs, Rank, Percent

Programs	Present Demand	R	%	Projected Demand						Offerings		
				Clapp and Mayne	R	%	PROICC	R	%	Enrollment DIP	R	%
Vocational Industrial	1,710	1	35.6	21,130	1	47.3	21,495	1	40.2	15,673	1	32.2
Agriculture	1,349*	2	28.1	1,150	7	2.6	3,294	5	6.15	5,985	4	12.3
Business Education	635	3	13.2	6,370	2	14.3	8,924	3	16.6	13,912	2	28.6
Marketing and Distribution	566	4	11.7	5,230	3	11.7	13,163	2	24.6	7,290	3	14.9
Technical Education	290	5	6.0	5,180	4	11.6	2,610	6	4.8	2,275	5	4.6
Home Economics	257	6	5.3	3,910	5	8.7	3,838	4	7.2	1,455	7	3.0
Health	-0-	7	-0-	1,670	6	3.7	201	7	.4	2,045	6	4.2
TOTAL	4,807											

* Present demand data is the most recent obtained from the Department of Labor corresponding to December 1986 - February 1987. The occupation with the highest demand was farm-workers and crop gathering.

reduced and it is recommended that the curriculum of this project be integrated in other courses with the potential for self employment.

5. The Technical Education Program, although found as one in great occupational demand, revealed a significantly low enrollment. Emphasis should be placed in these courses to meet the demand projected. The majority of the occupations in technical areas require at least an associate degree and thus it is necessary to revise the curriculum as well as course offerings. (See Table 8.0)

6. The Home Economic Program revealed (See table 8.0), greater demand than the projected enrollments. However, the majority of occupations in demand in the program are those which require short, specific training. For this reason the curriculum of courses in areas such as cooker, bakery, housekeeper, among others, should be consolidated and revised.

7. The Health Related Occupations Program was found as the one with the lowest occupational demand. The enrollments were found to be from two to ten times greater than projected demand. Demand for courses such as practical nursing, technology of operating room, and X-Rays, were found to be low according to the different sources of data used. (See Table 8.0) These courses require a curricular revision as explained in the recommendations made by program.

8. The perception of students and teachers in regards to the occupations they can perform after graduation coincided with the findings of what occupations are in greater demand. (See Table 9.0).

Table 9.0

OCCUPATIONAL OPTIONS BY PROGRAM ACCORDING TO TEACHER'S AND STUDENT'S OPINION

Occupational Options by Program	Students Frequency	Rank	Teachers Frequency	Rank
Vocational Industrial				
1. Machines Operators, Commercial Garment and Apparel Construction Operators, Workmanship	11	1	7	1
2. Carpenter, Millwork and Cabinet Maker	10	2	3	4
3. Electrician	5	3	5	2
4. Mechanic, Engine Machines Technician	4	4	4	3
5. Furniture Maker	4	6	3	4
6. Production Workers	2	7	-	-
7. Plumber	2	8	-	-
8. Mechanic Assistant	1	9	1	5
9. Maintenance, Maintenance Technician	1	9	-	-
10. Solderer	1	9	1	5
Business Education				
1. Typist, Clerk-Typist	26	1	-	-
2. Accountant	7	2	-	-
3. Secretaries	3	3	-	-
4. Clerks, General Office Clerks	1	4	14	2
5. Accounting Assistant	-	-	18	1
6. Bilingual Secretaries	-	-	1	3

Table 9.0 - (cont.)

Occupational Options by Program	Students Frequency	Rank	Teachers Frequency	Rank
Agriculture				
1. Farmer	6	1	-	-
2. Agronomist	3	2	8	1
3. Gardner, Agriculture related occupations	2	3	4	2
4. Apiculturist, Breeder	1	4	2	3
Health				
1. Hospital work	10	1	-	-
2. Practical Nurse	-	-	1	1
Home Economics				
1. Cook, Baker	10	1	5	1
2. Waiter, Cook Assistant	-	-	3	2
Technical Education				
1. Engineering Technician	4	1	3	1
2. Instrumentation Technician	4	1	2	2
3. Tool and Dye Maker	3	2	2	2
4. Electronic Technician	3	2	2	2
5. Cartographer Assistant	3	2	1	1
6. Chemical Technician	1	3	2	2
7. Graphic Arts Technician	1	3	2	2

Table 9.0 - (cont.)

Occupational Options by Program	Students Frequency	Rank	Teachers Frequency	Rank
Marketing and Distribution				
1. Seller	11	1	2	2
2. Store worker	1	2	-	-
3. Decorator	-	-	3	1
4. Own Business Establishment	-	-	1	3
5. Publicity Agent	-	-	1	3